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EDITORIAL NOTES.

CASUALTIES.

Died of wounds on 9th May, Captain Joseph Kendrick Venables, M.C., N.Z.M.C.

Captain Venables obtained the Scottish Triple Qualification in 1914.

Died on service on 26th May, Staff-Surgeon Cecil Robert Morshead Baker, R.N.

Staff-Surgeon Baker graduated M.B., Ch.B. at the University of Edinburgh in 1906, and entered the Navy in the following year.

Killed in action on 23rd May, Major Edward John Elliot, R.A.M.C.

Major Elliot graduated at Edinburgh University in 1904, and entered the R.A.M.C. in 1906. He went to France in August 1914, and was mentioned in despatches in January 1916.

Died on service on 27th May, Lieutenant-Colonel Francis Wyville Thomson, I.M.S.

Lieutenant-Colonel Thomson graduated M.A. at Edinburgh University in 1880, and M.B., C.M. in 1886. He served in the Waziristan campaigns of 1894-96 and 1901-2, and in the China War of 1900. During the present war he served as Senior Medical Officer of the Tay Defences.

Died on service on 25th May, Major Algernon Westlake, R.A.M.C. (T.F.).

Major Westlake graduated M.B., C.M. at Edinburgh University in 1884.

Died of wounds on 1st June, Captain Francis Geoffrey Thatcher, M.C., R.A.M.C.

Captain Thatcher graduated M.B., Ch.B. at Edinburgh University in 1913, and entered the R.A.M.C. in July 1914.

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DIED on serviee, Lieutenant THOMAS FORREST, R.A.M.C., attached Indian Army.

Lieutenant Forrest graduated M.B., Ch.B. at Glasgow University in 1917.

DIED of wounds on 9th June, Lieutenant JOHN WATT SENTER, R.A.M.C.

Lieutenant Senter was a graduate of Edinburgh University—M.B., Ch.B. (1910), and B.Sc. in Public Health (1912). After graduating he acted as House Surgeon in the Ophthalmological and in the Laryngological Wards of the Royal Infirmary. He practised in the Newington district in Edinburgh.

STUDENT OF MEDICINE.

DIED of wounds, Second-Lieutenant GEORGE D. FRASER, Rifle Brigade, aged 19.

Lieutenant Fraser was a student of medicine in the University of Edinburgh, and went to the front in October 1917.

Royal College of Surgeons of Edinburgh.

THE following gentlemen having passed the requisite examinations have been admitted Fellows :—Joseph John Armistead, L.R.C.S.E. (Triple), Captain, R.A.M.C. ; Wendell Thomas Garretson, B.Sc., M.D. (State Univ. of Iowa, U.S.A.), L.R.C.S.E. (Triple) ; Samuel Green, M.R.C.S.(Eng.), L.R.C.P.(Lond.), House Surgeon, St. Bartholomew's Hospital, Norfolk War Hospital, Thorpe, Norwich ; Ernest William Lewis, M.B., Ch.B., M.D.(Edin. Univ.), Southport ; Vasudeo Dinkar Nimbkar, L.R.C.S.E. (Triple), Resident Ophthalmic Officer, Leeds General Infirmary ; Edward Hesketh Roberts, M.B., B.S. (Lond.), Tanybryn, Mold, N. Wales ; Arthur Lowndes Yates, M.R.C.S.(Eng.), L.R.C.P.(Lond.), M.B., B.S.(Lond.), M.D.(Lond.), Surgeon-in-charge, X-ray Department, Lincoln County Hospital, 2/1 West Lancs. Field Ambulance, B.E.F., France.

At the same meeting the Bathgate Memorial Prize, consisting of Bronze Medal and books, was, after a competitive examination in Materia Medica, awarded to Miss Janet Adeline Agnes Sang.

THE TREATMENT OF ACUTE APPENDICITIS.

By W. Q. WOOD, M.D., F.R.C.S.(Edin.), Temporary Assistant Surgeon, Royal Infirmary and Leith Hospital.

Acute appendicitis is the disease which most frequently calls for an urgent operation; it is a disease which is sometimes exceedingly treacherous and which is still accompanied by a considerable mortality; therefore, although so much has already been written on this subject, it is important to review from time to time our methods of treatment and their results. The majority of medical men are agreed upon the necessity for early operation—though we still hear an occasional dissentient voice—but there is some diversity of opinion as to the best mode of operative proceedure, especially in those cases in which infection has spread beyond the appendix to the surrounding peritoneum. There is a growing school of opinion whose supporters believe that in practically all cases the abdomen may be safely stitched up after the appendix has been removed; others hold that where infection of the peritoneum has occurred it is essential to provide for drainage of the infected area. The merits of any method of treatment can only be estimated by a careful study of results.

Since being called upon to perform the duties of temporary assistant surgeon to the Royal Infirmary, I have had exceptional opportunities, owing to the depletion of the staff, of operating on cases of this disease. I find that during the three years and nine months since the beginning of the war I have operated on 221 cases. These cases have the merit, from the point of view of a consideration of methods of treatment, of having been operated on within a comparatively limited space of time by the same operator and by the same methods. Almost all of these cases were operated on on the day of admission, and on going over the records I have endeavoured to exclude all cases in which a definite pathological lesion of the appendix was not demonstrated at operation. Most of the cases have been operated on in Edinburgh Royal Infirmary and in Leith Hospital, and I am glad to have this opportunity of thanking my chiefs there for allowing me to treat the cases.

From the point of view of treatment, cases of acute appendicitis are most conveniently grouped under three heads:—(1) *Early cases.* In these the appendix is in a state of catarrhal inflammation, the mucous membrane is swollen and congested, the muscular coat is thickened and infiltrated, the peritoneum covering the appendix

is usually somewhat congested and may show a deposit of fibrin on its surface. The peritoneal cavity may contain a little serous fluid, but there is no extension of the infection to the peritoneum itself. The majority of these cases are operated on within twenty-four to thirty-six hours of the onset. (2) Cases in which the *infection has spread* through the wall of the appendix *to the surrounding peritoneum* and is still actively spreading. The resulting peritonitis may be comparatively localised owing to the presence of fibrinous adhesions, but in many cases a separate collection of pus will be found in the pouch of Douglas, and in the majority of cases infection of the peritoneum tends to spread with the passage of time. The advanced stage of this variety is seen in many instances of diffuse peritonitis. The appendix itself is commonly gangrenous and often perforated in addition, though in some cases the infection extends through the wall of the appendix before gangrene has had time to occur. These cases are usually sent to hospital from two to five or six days after the commencement of the attack. (3) *Cases with localised abscess.* In these the infection has spread through the wall of the appendix into an area which is already shut off by adhesions. The adhesions persist and are successful in localising the infection. The appendix is nearly always gangrenous and perforated. These cases are seen four to ten days or later after the onset. It is the second type of case, the case with spreading peritonitis, which is associated with the highest mortality.

The mortality from acute appendicitis within comparatively recent years has been very high. During the years 1849 to 1903 the mortality in cases with a well-marked peritonitis in St. Thomas' Hospital, as quoted by Sargent,[5] was 81·2 per cent.; in 1909 it had fallen to 35 per cent. The improvement was ascribed to the rejection of methods of irrigation in cleansing the peritoneal cavity. The mortality from appendix abscess in the same hospital is given by Sargent as 15 per cent. Sir George Beatson[2] gives the mortality from acute appendicitis in a group of Scottish hospitals between the years 1898 and 1911 as 23·3 per cent. These figures are all remarkably high. D. P. D. Wilkie[7] collected the results in Edinburgh Royal Infirmary for the three years 1910 to 1913; he found that in 1469 cases of acute appendicular disease the mortality was 7·3 per cent. The most recent results which I have been able to obtain are those published by G. Grey Turner[6] in 1915. In 1005 cases of appendicitis, including interval cases, operated on by him during the previous fifteen years, the mortality

was 4·67 per cent. When 257 interval cases are deducted, the mortality in the acute cases becomes 6·27 per cent. In the last 100 cases published by the late J. B. Murphy[4] the mortality was 2 per cent.; few surgeons in this country have attained to such a high degree of excellence in their results.

In the present series, in 221 cases there were thirteen deaths —a mortality of 5·88 per cent. Although little importance is to be attached to any slight differences in statistics, since much must depend on the number of advanced cases of peritonitis which come into the group reviewed, these results are, on the whole, satisfactory, and I shall venture later to describe the operative procedure employed. In the meantime it is very instructive to subdivide the cases into the three groups indicated above. There were ninety which fall into the first group—cases without obvious infection of the peritoneum; all of these recovered. Of definitely localised appendix abscess there were only ten cases; again there were no fatalities. Grey Turner[6] found a mortality of 10·2 per cent. in appendix abscess; Sargent,[5] as noted above, places it as 15 per cent. The present number of cases of abscess is too small to enable us to draw any deductions of great value, but most likely the satisfactory results are to be ascribed to careful packing off of the general peritoneum before the abscess is opened and the maintenance of free drainage afterwards. Of cases with infection of the peritoneum there were 121, and all of the fatal cases belong to this group, the mortality in these cases being 10·74 per cent. The majority of the cases showed marked infection of the peritoneum; the appendix is recorded as gangrenous in fifty-three and perforated without extensive gangrene in thirteen. A number of other cases were gangrenous, though this fact has been omitted in the notes. The lesson to be learnt from a review of this group is the oft-repeated one of the necessity for early operation in acute appendicitis. If all cases were submitted to operation during the first twenty-four hours of an attack the mortality would be practically nil. At the end of that time no one can tell what the course of the disease will be. In at least four of the present cases the appendix was gangrenous or perforated in twenty-four hours or little over; such cases are certain to go on to severe infection of the peritoneum. Wilkie[7] has shown that where the lumen of the appendix is obstructed by a constriction or a concretion the dammed-up contents are of excessive virulence and bring about gangrene of the distal part of the appendix within a very short time. My experience has been that this condition of acute

appendicular obstruction is comparatively common. Wilkie has pointed out that the symptoms are characteristic. The pain is of unusually sudden onset and is very severe at the commencement, the temperature is normal or subnormal in the early stages, and the pulse is very little altered in frequency. Localised tenderness is usually very marked, though occasionally it is slight. A recent case illustrated this condition well. The patient was a woman, æt. 28. The attack commenced on the evening of 20th April with the sudden onset of severe pain in the lower abdomen. It was so severe as almost to double her up and was definitely spasmodic in character, recurring at intervals of about fifteen minutes. She vomited once, and was unable to sleep on account of the pain. She was sent to hospital on the following day, and on examination she showed a temperature of 96·6° F. and a pulse of 88. There was marked tenderness in the region of M'Burney's point. At operation the appendix was found gangrenous in its whole extent, with a concretion impacted at its base. After removal of the appendix and drainage of the abdomen the patient made an excellent recovery.

It is clear, then, that in view of the risk involved in delay and the freedom from danger of the early operation, the practitioner who fails to recommend operative treatment or, at least, surgical advice in the early stages of acute appendicitis assumes a grave responsibility.

A survey of the causes of death in the thirteen fatal cases is of considerable interest. All of the cases were seriously ill, with a well-marked peritoneal infection. One patient died on the operating table; two others were practically moribund at the time of operation, one dying a few hours afterwards and one on the following day. A fourth patient had a very bad valvular lesion of the heart, with failure of compensation. His circulatory condition was so grave that a general anæsthetic was considered unsafe, and operation was performed under spinal and local anæsthesia. The anæsthesia was excellent and the patient stood the operation well. He failed to overcome the peritoneal infection, however, and died three days later. Two patients died from intestinal obstruction. In one the obstruction was due to toxic paresis of the bowel; the bowels did not act after operation and the patient died on the sixth day. In the other, obstruction developed on the twentieth day after operation and was due mainly to adhesions, though this patient showed considerable distension of the intestine at the time of operation. It has been shown that in such cases the intestines

fail to recover their normal tone for a considerable time after operation; adhesions would therefore be especially liable to develop. A seventh case, a girl of 12, died from a most intense cellulitis which commenced in the region of the wound and spread very rapidly across the abdominal wall and round to the back. The remaining six cases died of peritonitis. One of these passed into the hands of a colleague shortly after operation, owing to my being off duty from illness. He reopened the abdomen and found that the appendix stump had leaked. This is the only occasion on which this somewhat rare accident has happened in my hands.

From a consideration of these fatal cases it will be seen that in only five of the thirteen were the measures adopted—where they had a fair trial—unable to overcome the peritoneal infection. I shall therefore indicate the main features of the treatment employed.

The Operation.—The preliminary steps are the same in all three stages of the disease. In the great majority of cases the gridiron incision has been employed. There can be little doubt that ventral hernia is less common after the gridiron incision than after any other. It is sometimes maintained that access is difficult through such an incision if the appendix lies in one of the less common positions—down towards the pelvis or up towards the liver in the retrocæcal position. I have not met with any case in which there was much difficulty in reaching the appendix by this method. The pelvic appendix can be reached by prolonging the lower part of the incision inwards so as to open the rectus sheath; when the rectus is drawn in, the whole hand can be passed into the pelvis if necessary. When the appendix lies very high up it is occasionally necessary to prolong the upper end of the incision and to cut across the internal oblique muscle in the upper part of the wound at right angles to the direction of its fibres. The internal oblique can be easily repaired and the damage done to the muscle is not great. Apart from the fact that the gridiron incision does practically no damage to the muscles, it has the additional and probably more important advantage of causing no injury to the nerves of the abdominal wall.

The abdomen having been opened, the further treatment depends on the stage of the disease. In the "early" cases nothing more is required than a simple removal of the appendix. The operation is almost invariably simple, easy, and safe, and can be completed in a few minutes. The abdomen can be closed com-

pletely in practically all cases, though in a few instances, where I have suspected that infection may have spread beyond the appendix, a drain of rubber dam or rubber tubing has been left for forty-eight hours. It is the treatment of the second type of case that calls for the exercise of care and judgment. Murphy[4] has pointed out very clearly the importance of avoiding the disturbance of enveloping adhesions as far as possible. Fibrinous adhesions not only serve to combat the spread of the infection, but they play a most important part in diminishing toxic absorption. The essential steps are therefore to remove the appendix with as little disturbance to the surrounding parts as possible, to cleanse the peritoneum as far as is considered advisable, and to provide for free drainage of the area of infection. If there is any difficulty in finding the appendix, the anterior tænia coli of the cæcum is always a reliable guide to its base. Where the appendix is buried in adhesions I have found it a most useful and time-saving procedure to divide the base, in the first instance, between artery forceps and then to remove the remainder by gentle dissection with the finger, using the forceps on the base as a tractor to keep the appendix on the stretch. This method is of special value where the appendix is retrocæcal. The toilet of the peritoneum is performed by mopping up the surrounding pus with gauze swabs, keeping in mind the necessity for preserving the enveloping adhesions. Much damage may be done by excessive zeal in cleansing the abdomen. The cleansing in all cases is incomplete, since the organisms are present not only in the free pus but in the substance of the peritoneum itself, and in layers of pus between coils of intestine which must always escape the attentions of the surgeon. It is certain, therefore, that in all of these cases a greater or less amount of infection remains. The peritoneum is possessed of most remarkable powers of dealing with infection, and it is undoubtedly true that some of these cases may be closed completely and make an excellent recovery. This method has been tried repeatedly within recent years in the Edinburgh school as well as elsewhere. The results are frequently brilliant, but every now and then a disaster occurs, and these disasters have been of too frequent occurrence to justify a continuance of this method of treatment. The best results which I have been able to discover are those given by J. Grant Andrew[1] at a meeting of the Glasgow Medico-Chirurgical Society in March 1913; in eighty-five cases treated in this way there were seven deaths—a mortality of 8·23 per cent. In many of these cases the

appendix was gangrenous and had perforated in one-third, so that these results are certainly good. The results in the hands of others have been less satisfactory. J. A. Blake, as quoted by Moynihan,[3] recommends cleansing of the abdominal cavity by free irrigation, with closure of the wound except for a small drain which just enters the abdominal cavity to permit the escape of excess of irrigating fluid. In thirty-eight cases of diffuse peritonitis due to appendicitis treated in this way there were seven deaths—a mortality of 18·4 per cent. These were the worst type of cases, but the mortality is too high, even in these, to recommend this form of treatment.

In providing for free drainage of the abdomen in all cases of peritoneal infection I have merely followed the methods of my senior teachers in the Royal Infirmary. The procedure has been, in cases of widespread peritonitis, to make an additional small incision above the symphysis pubis, and to pass a glass tube down to the pouch of Douglas; a rubber, or occasionally a glass tube, is left in the appendix wound also, passing to the region which the appendix occupied. In earlier cases the pelvis alone is drained by a glass tube which passes down from the appendix wound. The tube employed for drainage of the pelvis is about 6 to 7 ins. long and fully ½ in. in diameter, and is of the type introduced, I believe, by Mr. J. M. Cotterill. The peritoneal exudate enters the tube by a vertical slot about 1¼ in. long at the lower end. The slot has the advantage over the usual small round perforations that there is no possibility of a portion of the omentum becoming fixed in the opening—an accident by no means uncommon where the perforated tube is used. I have never seen any harmful results from the use of glass tubes, and the fact that they are rigid ensures a much more reliable channel for drainage than where a rubber tube is used. It is said that they may sometimes press on the intestine and cause intestinal obstruction, or that they are even responsible for the production of a faecal fistula by pressing on a devitalised piece of bowel and causing necrosis. I have not met with any such cases. The glass tube is replaced at the end of forty-eight hours by one of rubber, a distinct drainage channel having been established at the end of that time in the position the glass tube occupied. The rubber tube is gradually shortened but is not removed until the discharge of pus has almost ceased.

In dealing with an appendix abscess, the essential point is to avoid infection of the general peritoneal cavity. In the majority

of cases the peritoneal cavity is opened freely and gauze packs must be carefully arranged to prevent the pus from infecting the general peritoneum. The abscess can always be opened by gentle burrowing with the finger. The pus is carefully mopped up as it escapes, and the abscess cavity then cleansed in the usual way. The appendix may be removed if it is in an easily accessible position, but if it is firmly embedded in adhesions it is much better left alone. The appendix was left in three of the ten present cases. In one patient who had had an appendix abscess opened several times, the appendix was removed a few months after I had drained the abscess. It showed surprisingly little evidence of its previous experiences. The other two cases in which the appendix was left seem to have had no further trouble, as they have not reported, to my knowledge, since their discharge from hospital. I have been in the habit of draining cases of abscess with a rubber tube to avoid the possibility of injurious pressure on any devitalised piece of bowel such as might conceivably be caused by a glass tube.

After the peritoneum is closed in infective cases the wound is washed with a solution of spirit containing biniodide of mercury. I consider this measure of great value in preventing infection of the abdominal wall.

After-Treatment.—In all cases with peritonitis the patient has been treated either in the Fowler position or with the head of the bed elevated on blocks. The latter position is more comfortable to the patient and is quite as efficient as the other. In cases of abscess where the appendix has been retrocæcal and where there has been no infection of the pelvis I have considered it better to keep the patient flat on his back; in such cases to prop the patient up is to infect the previously healthy pelvis by gravitation of the discharge. Cases kept in this position have done well. Salines are administered only in the worst cases. In the case of average severity they are not necessary and the disturbance caused by their administration does more harm than good. The bowels are evacuated with castor oil, unless there is any tendency to sickness, when repeated small doses of calomel are preferred.

Post-Operative Complications.—The most noteworthy feature of the present series of cases is the complete absence of secondary infective complications where the abdomen had been drained. One example of residual abscess developed in the pelvis in a case which had been closed at operation; it was necessary to open and

drain the abscess on the twentieth day. No other infective complication of any kind has occurred; there has been no instance of subphrenic abscess, infective phlebitis of the abdominal veins, or the like. There has been a complete absence also of serious pulmonary complications; no case of empyema or pneumonia has occurred. One patient showed signs of pulmonary phthisis during her stay in hospital, but this was probably present before admission. It is evident, therefore, that the methods adopted have been successful in dealing with the infective process, the exceptions being those cases in which the infection has been very virulent from the commencement, and has proved fatal within a few days.

Acute intestinal obstruction developed in four cases. In one of these, as noted above, the obstruction was due to toxic paresis of the bowel and was fatal. In the three others it was due to post-operative adhesions; one died and two recovered. In operating for obstruction due to adhesions I have been in the habit of leaving a quantity of oil of vaseline in the peritoneal cavity after separation of the adhesions as recommended by Wilkie. Apart from post-operative obstruction I have found it a most successful measure in obstruction due to adhesions. It serves apparently to keep the roughened peritoneal coat of the intestine lubricated and free of adhesions until peristalsis returns, after which date adhesions rarely form.

Fæcal fistula developed in four cases. In two it closed spontaneously; in one of these I felt tempted to refer it to the action of cupad, which I had introduced into an appendix abscess to give it a trial. The third case occurred in the patient referred to above as having developed pulmonary phthisis; she was ultimately sent to the City Hospital and was lost sight of. It is possible that the appendix abscess from which this patient suffered was of tuberculous origin. The fourth case is still in hospital and appears likely to close spontaneously. Leakage of the appendix stump has been mentioned as having occurred once. I am unable to give an explanation of this misfortune. The cæcum was healthy at the primary operation, and the stump was invaginated with a purse-string suture in the ordinary way.

With regard to ventral hernia it is difficult to make any definite statement; many of the cases are recent, so that sufficient time for the development of a hernia has not elapsed, and many patients who develop a ventral hernia are content to put up with

the condition, and do not report it. I am aware of only five cases; three of these were submitted to a second operation, while the remaining two preferred non-operative treatment.

References.—[1] Andrew, J. G., *Lancet*, 1913, vol. i. p. 832. [2] Beatson, Sir George, *Lancet*, 1912, vol. i. p. 1253. [3] Moynihan, Sir Berkeley, *Abdominal Operations*, vol. i. p. 124. [4] Murphy, J. B., Keen's *Surgery*, vol. iv. p. 727. [5] Sargent, Percy, Choyce's *System of Surgery*, vol. ii. p. 537. [6] Turner, G. Grey, *Brit. Med. Journ.*, 1915, vol. i. p. 997. [7] Wilkie, D. P. D., *Brit. Med. Journ.*, 1914, vol. ii. p. 959.

CLINICAL RECORD.

CASE OF CALCULUS ANURIA TREATED BY DECAPSULATION OF THE KIDNEY AND DRAINAGE OF THE RENAL PELVIS.

By N. H. BRONNUM, M.B., Ch.B., Resident Medical Officer, Edinburgh War Hospital, Bangour.

THE patient joined the Army in 1906, and served in India and South Africa before the present war. There is no history of any tropical disease, but he had had gonorrhœa three times, according to his own statement, and suffered a good deal from gleet after each attack.

On 18th July 1916 he was wounded by shrapnel in France, the wound being a through and through wound over the base of Scarpa's triangle of the right leg. The metal also went through the scrotum at the base of the penis without injuring the testicles, and entered the left thigh.

On 10th August 1916 it was noted that some of the deep stitches had sloughed out from the urethral wound at the base of the penis, and that urine was passing from the wound if a catheter was not tied in. The left epididymis was adherent to the scrotal skin; there was a discharging sinus; and a probe passed from the wound on the right side of the base of penis reached the bottom of the scrotum on the left side.

At that period the patient passed between 30 and 50 ozs. of urine in twenty-four hours, and his temperature was normal. The pulse was between 70 and 80.

On 10th September the scrotal wound was opened up and drained. All the wounds were now practically healed except that at the base of the penis, where there was a urinary fistula. The deep stitches had come away, and a catheter was kept tied in.

On 16th September the urine was examined: Sp. gr. 1020, reaction acid, no albumin or sugar.

Towards the end of September there was fever and vomiting, accompanied by "some patchy consolidation of the right middle and lower lobes." The temperature fluctuated for about three weeks, rising to 103° F. in the evening, and albumin was noted in the urine. The physical signs cleared up after a few days, but "bilious vomiting" continued daily and the temperature kept fluctuating. The amount of urine passed at that time was not registered.

After a few days of normal temperature and apparent well-being the chart again shows a fluctuating temperature on 28th October, and

the urine was found to contain pus. During the first half of November the temperature again returned to normal.

All through December the temperature was normal, but the amount of urine went down to about 20 ozs. in twenty-four hours, and it was noted that "stones had been passed per urethram."

In January the temperature went up again, and the patient complained of headache and pain across the upper part of the abdomen. About 20 ozs. of urine were passed in twenty-four hours, and the patient became somewhat drowsy. A Widal test was done on 16th January 1917, with negative result. The patient suffered a good deal from pain in the right loin during February and March, and the temperature curve undulated all through that period.

On 3rd April the right kidney was removed. Small calculi were found in the pelvis, and the kidney itself is described in the notes which accompanied the patient as "a bag of pus."

After a period with steady temperature the patient again became ill, complaining of pain over the left kidney, and passing pus in the urine. A specimen obtained by catheterisation of the left ureter gave a growth of B. coli and after that the patient was treated with vaccine of B. coli every seventh day. A few phosphatic stones were passed per urethram.

On 13th August the patient was transferred to another hospital and his symptoms at that period are described as "frequency of micturition and slight pain after micturition."

On 28th August he was transferred to this hospital and came in as a walking case; he was admitted to a surgical ward, when it was found that he suffered from a urethral fistula.

Two days after admission to this ward absolute suppression of urine took place; on catheterisation about 1 oz. of almost pure pus was obtained. The patient was treated with hot packs, diuretics, and diaphoretics. There was a dull pain over the left kidney, but no colicky pain. The kidney could not be palpated, and there was no marked dulness in the left flank.

All efforts to induce the kidney to excrete proved fruitless, the patient became drowsy, and the breath smelled markedly of acetone.

As the patient's condition was desperate, Captain Miles cut down on the kidney by lumbar incision. There was great œdema of the perirenal connective tissue; the kidney was large and tense but there was no distension of the pelvis. The ureter was felt but no stone recognised. The kidney was decapsulated, and an incision made through the parenchyma into the pelvis. Yellow, slightly odorous pus and urine escaped. A finger was passed into the pelvis and the calyces explored. In one calyx a small rough (? phosphatic) calculus, about the size of a bean, was felt, but as it could not be extracted without further mutilation of the kidney it was left *in situ*. Two rubber tubes were inserted

into the pelvis through the kidney substance, eusol gauze was packed round the drains, and the wound partly sutured.

Two days after the operation a large quantity of urine came away through the drains, the general condition of the patient improved rapidly, and five days after the operation he passed urine by the natural passage. A few days later he passed a small calculus.

The patient made an uneventful recovery, the operation wound closing by granulations, and six weeks after the operation he was up and about, but there was still pus in his urine.

After having been out of bed for a fortnight, passing normal quantities of urine, he again had an attack of sudden anuria, vomiting, and pain in the left side of the abdomen, which was found to be quite rigid. General symptoms of uræmia, with twitchings, developed.

The old scar in the left lumbar region was opened up and the kidney was found to be adherent to the scar tissue, and this was separated from the posterior aspect of the kidney. On passing the finger round the kidney it was found that the pelvis was not distended. The kidney substance having been ruptured in the stripping off of the scar tissue, no incision was made into the parenchyma, but a rubber drain was inserted and the wound packed round the drain with eusol gauze.

Two days after the operation a smell of urine was detected in the dressing. On the third day the dressing was soaked with urine, and the patient had passed 61 ozs. of urine by the natural passage overnight.

During the following days there was a copious flow of urine. Vomiting diminished, and for a short time the patient appeared to be improving. But it was only a momentary improvement. His pulse, which hitherto had remained fairly good, suddenly became weak and irregular. For a few days the heart responded to stimulants, but eventually it broke down entirely, and the patient died fifteen days after the second operation. Right up to the end the kidney continued to exerete fair quantities of urine.

I am indebted to Lieut.-Col. Keay, R.A.M.C., Officer Commanding the Edinburgh War Hospital, Bangour, and Capt. Miles, R.A.M.C., Visiting Surgeon, for permission to publish an account of this case.

THE TRAINING OF THE STUDENT OF MEDICINE:

An Inquiry Conducted under the Auspices of the Edinburgh Pathological Club.

XXIII.—THE TEACHING OF MEDICINE.

By Professor WILLIAM RUSSELL.

I shall begin by presenting to the Club a copy of a paper published by me in 1910, entitled *A Working Plan of Clinical Medicine Teaching*. Since that time an alteration has been made in the curriculum: the positions of medicine and surgery having been transposed. There are great advantages in this transposition; those to medicine are considerable, and, I think, those to surgery are still greater. One of the advantages is that the transposition brings the teaching of medicine into conjunction with the teaching of pathology and materia medica. This conjunction, I take it, is a sound arrangement. Physical examination and diagnosis hang largely upon our knowledge of pathology; and the treatment of diseases hangs, of course, upon pharmacology and therapeutics. The result, however, of this direct conjunction between the subjects I have mentioned depends upon how the scheme is carried out; it depends upon the loyal and intimate co-operation and co-ordination of teachers, having for its definite object the efficient teaching of the student rather than being determined by the whim or convenience of the teachers.

In the first place, it is essential that the teacher should fully realise the stage his pupils are at. He has a great opportunity for determining the bent of their minds towards practical medicine, instead of being directed at the outset towards the standpoint of surgery. I ask you to think for a moment of the position of the student beginning the study of medicine in his third winter. He has completed his physiological and his anatomical studies. He has had absolutely no previous contact with either normal or abnormal clinical phenomena. He is entirely ignorant of these, except in so far as he has a certain theoretical knowledge of them from the study of anatomy and physiology. He comes to us in that perfectly virgin condition of mind; and the method which seems to me to be the only satisfactory one in his first term, which only includes ten weeks, is that it should be devoted entirely to the physical examination of the circulation, the lungs, the abdomen, and the nervous system. I ask you to think what this means to the student, as I have tried to picture him to you. It means that he has to learn to hear heart-sounds—to learn to determine clearly the first from the second sound; he has to learn to hear the sounds produced over the respiratory organs during respiration; and

he has further to learn to examine the organs in the abdomen in so far as they are open to investigation. He has also to learn to examine the nervous system—the proper method of determining whether a patient has lost the power of voluntary movement anywhere, the amount of loss of power, and so on. He has therefore a very large field to cover, which can only be successfully covered by the individual student learning to do all those things. My experience is that it takes weeks before the student can be quite sure as to whether heart-sounds are feeble or not feeble, before he is quite sure that he knows the first sound from the second, and so on. But unless he learns this he cannot succeed in the later stages of his work. No doubt, while he is learning these things, one at the same time begins rapidly to introduce abnormal conditions to his notice—*e.g.* dulness on one side of the chest as compared with the other, abnormal sounds in the heart. All this is difficult enough for the student, but the teacher also has his difficulties, and one of them is, how definitely to satisfy himself that all the members of his class are really learning the things that they *must* know—the things that are the mere alphabet of the teaching, and yet without a knowledge of which teaching will fail.

It is not enough to talk to the students about these things—they have got to learn to *do* them over and over again. They never acquire confidence in their own observations until they have examined many lungs and hearts, and so on. It is necessary and desirable that this practical teaching should be accompanied by a certain amount of exposition of the meaning of normal phenomena. From the standpoint of the student's physiological and anatomical knowledge, the teacher must expound to him the significance and meaning of the respiratory sounds in different parts of the respiratory tract, and the same with regard to the heart sounds. When the abnormal is approached, the same methods of exposition are necessary. Without any knowledge of morbid anatomy the student can be taught to know and to understand the circulatory phenomena, the respiratory phenomena, certain matters in the abdomen, and the method of examination of the nervous system. With little knowledge of pathology he can be taught to understand heart and lung abnormal phenomena, abdominal conditions, the reflexes, and other phenomena in nervous cases. This, in my experience, takes the greater part of the ten weeks of this first term. No doubt this work is laborious and tiresome for a senior teacher, but I have always felt at the end of it that it was as worth while to him as to his pupils, because, this point reached, the student makes rapid progress. During this winter I had the opportunity of intensifying the application of this method with my third-winter students, and I was amazed at the extraordinary and rapid progress made in the physical examination of patients by the time the Christmas vacation came. My feeling about this elementary work is that it specially requires an

expert and experienced teacher. The longer I live, the more I am satisfied that the young and inexperienced teacher is not so good at it as the more experienced one.

The second term is devoted to case-taking and the consideration of individual disorders and diseases, associated, of course, with the history and the subjective phenomena and the importance and significance of these in reaching a diagnosis. With this groundwork you can carry the student anywhere; without it you will get men coming up for their final examination who do not know how to examine the heart, who cannot distinguish between puerile breathing and bronchial breathing, who cannot tell you whether a liver is enlarged, and who cannot apply the ordinary methods for the examination of the nervous system.

I need not occupy your time further in regard to the teaching of clinical medicine to the junior student. There is no difficulty in teaching the senior student if he knows how to examine patients correctly.

A few words as to co-ordination. The first question one asks here is, "What ought pathology to do?" I venture to suggest that pathology, to help us, must begin with inflammation. I might even suggest that the inflammation of free surfaces be rapidly overtaken; after that, heart, lungs, vessels, abdominal organs, and nervous system ought as rapidly as possible to be gone over. Secondly, "What ought systematic medicine to do?" I venture to say that systematic medicine ought to begin at once with the heart and circulation, and from there to go on to the lungs, abdominal organs, and nervous system. I think fevers should be taught elsewhere, and be only very briefly dealt with in the systematic course. As to systematic teaching of medicine, in all the systems it is wise to begin by recalling the anatomy and physiology of the organs, so as to correlate the student's knowledge of anatomy to the facts of medicine. By so doing, pathology is given the start of a few days, so that it can be in advance of the medicine teaching. Practical medicine is, in fact, the science of disordered function and of altered anatomy. Pathology and systematic medicine, as well as clinical medicine, can be approached from the physiological and anatomical standpoints.

With regard to the systematic lecture, I take it that it has definite advantages. The tendency of systematic lecturing, I think, is to give too much; it is not necessary for a systematic course of lectures to be an elaborate text-book, nor is it necessarily a very prolonged course. But it ought to be better than any text-book. It implies, of course, a very true sense of perspective on the part of the lecturer, that he is capable of big generalisations, and that he has the power of exposition. It is difficult for me to get altogether away from the belief that the teaching of the lecture-room is not compensated for by

the mere reading of text-books. There is no time to read the number of books that it would be necessary to read, and the systematic lecture in medicine ought to include the complete knowledge and experience of the lecturer who has acquired that sense of perspective in medicine which is so desirable and so necessary, and which can be presented in the lecture-room but is difficult to present in a text-book of moderate dimensions.

XXIV.—THE TEACHING OF MEDICINE.

By Professor G. LOVELL GULLAND.

In these remarks I do not propose to discuss the ideal course of medicine, but only to expose to you some of the present difficulties with which we have to deal, in the hope that you may be able to help us. I was appointed during the war to a chair which has long been starved in the matter of equipment, and war-time conditions do not allow me to do more than dream of what I want to do and make the smallest beginnings towards it.

The order in which I give my lectures is very much that which Professor Russell describes; but I always take fevers first in order to let the pathologist get ahead of me, so that when we do come to discuss the heart and the lungs, and so on, the men have had a little of it before.

I entirely agree, also, with Professor Russell as to the necessity of at any rate a certain amount of systematic teaching. You cannot get the student to read text-books systematically and steadily without the regular stimulus of systematic discussion. Professor Russell laid stress upon one point which I think is of great importance, viz. that the systematic lecturer can select the significant and point out to the student what it is really important for him to know in a way that the text-book does not and never can do. Further, a text-book the minute it is published almost is out of date. One's lectures have to be constantly revised. Since I began lecturing in medicine about twelve years ago I have rewritten a large part of my heart lectures four times, and many of the other subjects, in which advance was being made, almost as often. I do not know whether it is good for the student to listen to systematic lectures, but it is certainly good for the lecturer to give them. For it means that once a year at least he has to review his knowledge of every department of medicine. I began lecturing systematically with the idea that my students were not to take notes but to listen to me, but I soon found that they would not allow that. What they wanted was a set of good notes which they could read instead of a text-book. One has to remember also that unless a student is taking notes his attention inevitably wanders at times. We all know that written notes are the best aid to memory.

I regret that students have got out of the way of taking notes in clinical lectures, because one is apt in clinical lectures to make useful generalisations in a way one cannot always do in systematic teaching. One has further to remember as a systematic teacher three things that the student wants. In the first place, he wants to get through his Final. That looms largest. Secondly, he wants in medicine to get what will help him to understand his clinical work and his dispensary work. Thirdly, he wants to get what will help him in practice. The lecturer's view is an exactly opposite one, but for success in teaching one must compromise to a certain extent. There are many other things to remember, *e.g.* that medicine is not a science but an art; it is based more and more upon science every day, but it is not and never will be a purely scientific subject. One has to impress upon the student that he is dealing with men and women—not with diseases, but with people who have diseases.

We are faced with the question next as to whether the present number of lectures—one hundred—is the proper one. Of course medicine is the largest subject in the curriculum, and if one is to teach it in anything like detail the hundred lectures are far too few. On the other hand, if one is going to teach only broad generalisations or selected subjects, a hundred lectures are too many. My own ideal perhaps would be a course of one hundred and fifty meetings, of which fifty or more would be practical. And this practical part should not be taken separately but should accompany the individual systems, *i.e.* when taking, say, the heart first of all, the student would be obliged to exercise himself upon the various cardiac instruments, and he would be very carefully shown those which he cannot himself use, and so on. When the lungs are treated of, he should be made to examine sputa, pleural fluids, etc., far more fully than is at present done or can possibly be done in the tutorial classes. For many years Sir Robert Philip and I gave such a class on the practical side, which was a very useful one in its day. But fully to develop this idea would mean a subdivision of the large classes with which we deal for the practical part; it would mean a department which I have not got, and assistants whom I have not got either.

I regard the place of the course of medicine in the present curriculum as extremely unsatisfactory—for three main reasons. In the first place, because the student is insufficiently prepared. Pathology and materia medica should precede medicine. A great deal is made of the necessity of some knowledge of medicine in order to appreciate pathology and materia medica. I cannot remember that I had as a student any great difficulty in appreciating either of these subjects, although I did not know very much about medicine. One has to remember that pathology and materia medica are going to be passed and done with to a great extent, while medicine is to be the lifework of the larger

number of students, and it seems, therefore, absurd that medicine should be used to make pathology and materia medica clear to students: it should be the other way round. Secondly, the winter in which medicine is now taught—the third winter—is too full already, and it is overshadowed in the case of a great many students by the Third Professional. Even when the examination is not at the immediate end of the winter session, its subjects are the immediate interest. The Final is a long way off, and students perfectly naturally tend to work rather at pathology and materia medica than at medicine. I think there is too much teaching of pathology. Not that I would willingly curtail it—I spent too many years in the study of pathology not to know its value; but considering that the student has to do clinical medicine, medicine, and materia medica at the same time, there is too much pathology. The students complain to me constantly that they do not get time to do their medicine, and especially their clinical work, thoroughly because of this. The third point is that the course is too far away from the Final. From the end of the third winter until perhaps the second term of the fifth winter the student does no medicine except what happens to come into the special courses and dispensary work. We are going to remedy that to a certain extent by insisting that the senior student in clinical medicine does not, as he has often done, regard his last three months as a sort of dilettante attendance on clinical lectures and wandering about the wards, but that he really does subject himself to exactly the same discipline as the junior, except that he does not have to attend tutorial classes. But I doubt very much whether that will be really sufficient. There are two possible remedies that I see for this difficulty. I am quite convinced that, as regards the systematic lectures, the early part of the session, so far as real understanding of what is being done goes, is largely wasted, and it is impossible not to feel that pathology ought to precede medicine. My first remedy would be the transposition of surgery and medicine to their former places. Surgery has always seemed to me a very much more natural introduction to clinical study than medicine, because you teach the student from the first to use his hands: you let him make use of his anatomy at once in a way that he does not do if he passes to medicine, because, after all, the amount of minute anatomy required in medicine is comparatively small, especially for junior students. He would remember his anatomy in a way which he certainly does not at present. The amount of pathology which is required for surgery is, I think, not so great as that required for the study of medicine, and what is not given by the pathologist can very easily be given—as a matter of fact is given—by the surgeons themselves. Another way out of the difficulty, if the teachers of pathology and materia medica insist upon the students knowing something of medicine, is that the course of systematic medicine could be broken into two three-months' courses—

the first being given to junior students in the first three months of the third winter, and dealing with the main, simple, ordinary diseases, followed by a more advanced course for the seniors in the second term of the fifth winter while they are taking out their second term of clinical medicine. I should like very much to hear the views of the Club as to these points.

Though it is not perhaps strictly within the purview of this discussion, I think one might say a word about examinations. I certainly regard them as very unsatisfactory. It is essential that we get more time to make the final examinations much more practical and much more searching. In clinical medicine the "spotting" of urines and microscopes is a mere farce; we ought to insist upon real urine testing, real chemical examination of other substances, and real microscopic work. Whether that should be done at the systematic oral or at the clinical oral I think does not very much matter. We should also consider the advisability of including in the final examination the results of class examinations and the work in the wards, so as to encourage steady work and discourage spurting. We all know that neither the student nor the examiner is always at his best at an oral examination. I think that confidential reports from the systematic and clinical teachers might well take their place in determining whether a man should pass his Final, and at what level.

As regards the teaching of clinical medicine in particular, I do not know whether it is known to you that at the beginning of this winter a statement was drawn up by the medical faculty, after considerable consultation, on the improvement of clinical medicine after the war. It is a long document which I need not read to you; its main features are—limitation of size of cliniques; differentiation of junior and senior teaching and consequent subdivision of classes; much fuller utilisation of the services of the assistant physicians for this; closer supervision of case-taking; compulsory attendance at the medical out-patient department, with roll-call there and in the wards; the tutorial to last six months; the following up of cases that die to the post-mortem room; the pathological investigation of the material by the clerk of the case, etc.

I think a great deal may be done by further correlation between the systematic and clinical teaching. In my own wards I try to teach as far as I can upon the subject on which I happen to be lecturing systematically at that time. I think it might be very well worth while for the systematic lecturers in medicine to run their courses on parallel lines, and to ask their clinical brethren to unite with them in going over the same subjects which are being dealt with systematically.

Of course the weak point, as regards practice, in our teaching is that it is conducted on hospital patients—*i.e.* either on people so seriously ill that they cannot be handled by large numbers of students,

or else on cases of well-established disease, which are excellent for the examination of physical signs, but which do not admit of really curative or preventive treatment. That is one reason, I think, why the practitioner is often weak in diagnosing the early stages of chronic disease, and in the treatment of these early stages. The student does not see enough of the slighter and early cases which will form the bulk of his work in general practice. That gap is filled to a certain extent by the out-patient department, but, unfortunately, a large number of the cases which come up there are of the same "hospital" type. Our only help with this difficulty is the Dispensary system, which is, of course, one of the very strong points of Edinburgh. I foresee that if we are to make the best use of the Dispensaries we shall have to assume more control over them. We shall have to carry them with us, of course, and to a certain extent—I speak here with great diffidence—some central body must control their selection of medical officers, so that they shall be men who are fond of teaching, who can teach, and who are willing to take the necessary time to supervise their students in both outdoor and indoor work. Further, we shall have to see that the Dispensary cliniques are limited to the number of students who can usefully be taught and that each student looks after a proper number of cases outside. This will certainly mean the diversion of students from the more accessible and hence more popular Dispensaries to the less accessible.

Of course one has to realise that it is not desirable to attempt too much. The student must go on learning all his days, and our business is not so much, as Professor Russell has pointed out, to teach him as to help him to teach himself. We do manage in Edinburgh somehow to turn out men who keep on learning. I have kept in pretty close touch with what has been going on on various fronts, and many men there, who were not specially brilliant here, I hear of as deserving trust and doing exceedingly well; and I hear from many men there that they prefer Edinburgh men and stick to them when they have got them. In Malta we had about three hundred medical officers, of whom sixty were Edinburgh men—and they were the sixty best, all things considered. Fully one-third of the hospitals were commanded by Edinburgh men, and these were the best administered hospitals. I do not think that we have any reason to disparage ourselves. I do not say, however, that we cannot do better, and if you can point out to me how I personally can do better I shall be only too delighted.

XXV.—THE TEACHING OF MEDICINE.

By Dr. EDWIN MATTHEW, Assistant Physician, Royal Infirmary.

(*A*) The Teaching Arrangements in Medicine.

During the past eighteen months the assistant physicians to the Royal Infirmary have had under consideration the present teaching arrangements in medicine and the present state of hospital equipment in relation to this teaching. Certain defects were noted and discussed, and it was recognised that various improvements might with advantage be made. The invitation of the Pathological Club to contribute a paper on the teaching of medicine has afforded them the opportunity of presenting the conclusions unanimously arrived at, and by arrangement these conclusions and the recommendations arising out of them are presented in this paper.*

The efficiency and status of the Edinburgh Medical School largely depend on the standard set by the teachers of clinical medicine and surgery. The function of the school is to turn out thoroughly qualified practical men, well versed in modern methods of investigating and treating disease in its early and late stages—men imbued with a desire to help in advancing our knowledge of disease, recognising that in many directions their aid is both necessary and valuable.

The existing system is, in many directions, defective, and its defects are largely responsible for the dissatisfaction—openly expressed by some and felt by most—with the position and aims of the medical school at the present time. The assistant physicians frankly admit their share of responsibility in this matter, and are only anxious to have it corrected with as little delay as possible. The defects in the present system include: (*a*) Defects in the teaching arrangements proper, and (*b*) defects in equipment, which limit the efficiency of the teaching. The subject may be discussed conveniently under these two heads.

Teaching Arrangements—1. *Systematic Medicine.*—The systematic lecture has always been the basis of teaching in all subjects of the medical curriculum. The system has much in its favour, but as in other subjects, so in medicine, the systematic lecture can be overdone. If the aim is to give the student, in a course of one hundred lectures, a more or less complete account of diseased conditions—their recognition, results, and treatment—the method must necessarily resolve itself into a mere dictation exercise, with little benefit to the student. (For this purpose

* Dr. Ritchie, absent on military duty, took no part in these deliberations; Dr. Goodall, up to the date of his departure on war service a few months ago, was in complete general agreement with his colleagues.

one or other of the many excellent text-books can be utilised.) The duties of the professor might with advantage be considerably lightened, in so far as the number of systematic lectures is concerned; the course of instruction would greatly benefit thereby. Tuberculosis now has a chair to itself; fevers are fully dealt with elsewhere; there is a compulsory course on diseases of the skin. Much more attention should be paid to therapeutics, including general therapeutics, physical therapeutics, and dietetics; these should, so far as definite instruction is concerned, be taken in a separate course. The lectures in medicine could thus be reduced say to fifty, not necessarily delivered consecutively, and the remaining time be devoted to more practical work; there are many subjects in medicine which can be taught practically by the Professor of Systematic Medicine. For this purpose the professor should have more assistance; a scheme might be devised whereby the clinical tutors would be available for this work. In addition, the professor of medicine should take cognisance of two special branches of medicine which we believe are entirely neglected, viz. psychology in relation to medicine and medical ethics.

2. *Clinical Medicine.* — Instruction in clinical medicine includes clinical lectures, bedside cliniques, instruction in the medical out-patient department, clinical tutorial instruction, and dispensary practice. These will be considered *seriatim*.

(a) *Clinical Lectures.*—The arrangement recently adopted of having separate lectures for juniors and seniors is the only feasible one, and should be strictly adhered to, a senior student being defined as one who has attended bedside cliniques for six months. Lectures are delivered twice a week by the lecturers in rotation. At present each lecturer is in a compartment by himself, and, more or less, lectures independently of his colleagues. In our opinion the subjects for lecture should be carefully considered by the Clinical Board, and at the beginning of the session a syllabus should be drawn up of lectures suitable for junior and senior students. It is possible to draw up a scheme of lectures which would be a great advance on the present system, a scheme which would still give the physician in charge a really free hand in the choice of subjects.

(b) *Bedside Cliniques.*—The best results from teaching at the bedside can, in our view, only be obtained under the following conditions:—

1. The separation of junior and senior students. In the university calendar, under clinical medicine, it is stated that clinical lectures are delivered to senior and junior students separately: it would be well if the word "separately" were also included under bedside instruction.

2. By limitation of the cliniques. This was laid down as a regulation by the teaching staff about six years ago, but never effectively carried out. Only in this way can the student see and hear what he is meant to see and hear; also, in a limited clinique, the teacher can

quickly appreciate and discriminate the different grades of intelligence among the students. Any number greater than twenty-five is too large. Of course, if the total number of either junior or senior students exceeds 150, then each clinique will have to be proportionately larger.

3. That attendance by the students be regularly ascertained and enforced. If the clinical teacher has his responsibilities so has the student; he should be encouraged to be in the wards as much as possible, and also urged to observe and learn for himself, and not depend alone for his clinical knowledge on what he hears at clinique; he should be made to verify facts for himself by repeated examination, and time should be available for this.

4. The case records of the students should be taken into consideration in regard to qualifying certificates. The junior house physician should be responsible for assisting the students in case-taking, and the cases should be read and examined by the physician in charge. A student's work during his qualifying nine months—his records of cases, his attendance at cliniques and in the wards—should be available for reference and taken into consideration at the final examination.

5. Cliniques, for the junior student especially, should be more systematised. Haphazard choosing of cases for clinique, because they are good cases, does not give the student the proper grasp which orderly instruction in the various conditions of the different systems would. It is possible that at any one time suitable material is not available in any one charge for orderly instruction of systems, but it should be possible to make arrangements whereby the material in all the wards is open to every teacher for clinique purposes.

(c) *Medical Out-Patient Department.*—In recent years the arrangements in the medical out-patient department have, from the teaching standpoint, been far from satisfactory. Students drop in at all times—students who have done no clinical medicine, students who have done three months, six months, or nine months, and graduates. Effective teaching cannot be carried on under such conditions. The clinique should be restricted to senior students, those attached to a particular charge receiving out-patient instruction on the day the physician is waiting. An attempt has been made, beginning in January of this year, to organise such a clinique, but unfortunately, and wrongly we think, junior students have been instructed to attend. In our view, attendance at out-patient cliniques is not for the student who is still unfamiliar with the ordinary physical signs of disease.

(d) *Clinical Tutorials.*—A large part of the work of the tutor should be the personal supervision of the side-room work done by the student on his cases. The work should be of a very individual nature, as little class instruction as possible being included. If the curriculum would allow, it would be a great advantage for the student to have a short

course of instruction in physical methods prior to commencing ward work proper. This course would be devoted exclusively to methods of examination and physical signs present in health. The clinical tutor might with advantage have the assistance of senior student demonstrators in this course.

(c) *Dispensary Teaching.*—Dispensary practice is of great value to the student. A great part of his afterwork consists in the recognition and treatment of minor maladies, which he does not and cannot see in the wards of the Infirmary, but which are of everyday occurrence in Dispensary practice. Dispensary teaching should be definitely co-ordinated with the teaching in the Infirmary, and, in addition, the teaching in the Dispensary should be devised to meet this. If this arrangement were carried out, the teaching of medicine from the curative point of view could be brought into line with teaching from the preventive point of view. We concur in the advisability of this course as outlined by Dr. Robertson in the discussion on Preventive Medicine.

Final Examination in Medicine.—After a compulsory nine months' instruction in clinical medicine the student proceeds to his final examination. This examination, we believe, is not adequate, being too short and too casual, and it is doubtful if the fairest and best results are at present obtained. Longer time should be given to the oral examination of each student, and the examination in special or side-room work should be extended. This implies that the final examination should either extend over a longer time, or that more examiners be employed. In our opinion both are necessary, and we believe this can be easily met by appointing as examiners all the teachers in the Infirmary, both physicians and assistant physicians. We believe that the raising of the standard of the final examination on the above lines would be of great value in assuring the student's attendance at, and work in, the medical wards and side-rooms.

Before leaving this part of the subject, I may add that we are aware that in the last year or two the whole subject of the more efficient teaching of medicine has been under the consideration of the medical faculty, and a report was drawn up by them embodying certain recommendations which it was suggested should come into force after the war. This report was, we understand, in general approved of by the Board of Studies last year. We have recently had an opportunity of seeing this memorandum, and find that many of the recommendations in it are identical with those independently arrived at by us, and presented above.

I pass now to another aspect of teaching of very special importance to the medical school, namely, that of Hospital Equipment in Relation to Teaching.

(*B*) Equipment in Relation to Teaching.

Modern and adequate equipment are absolutely necessary for efficient teaching. Unless adequate facilities for the diagnosis and treatment of disease are provided it is impossible for the clinical teacher to give adequate instruction in modern medicine, or to stimulate the interest of the students in the practical application of the instruction that they have previously received in their earlier subjects. We shall refer briefly to the changes we think necessary for improving the facilities for teaching, and for the adequate treatment of patients in the Infirmary.

1. *Dental Department.*—In a hospital of 900 beds a large number of patients suffer from septic conditions of the mouth, which may have a considerable bearing on the etiology of many diseases of unknown origin in the wards. This necessitates a larger staff of dental surgeons and greater facilities for treating patients in the hospital. The staff has recently submitted to the manager a scheme for improving this department, which, if carried out, will modernise the teaching and make it more effective.

2. *Massage and Physical Therapeutics.*—The present arrangements for the treatment of patients are unsatisfactory alike from the point of view of the patients and the students. Recently the assistant physicians submitted a memorandum on this subject. If the scheme proposed in this memorandum is carried into effect, facilities will be available both for the efficient treatment of the patients and for giving the students a reasonable minimum of instruction in this important subject.

3. *Balneological Department.*—This department is at present in abeyance on account of the war. Its equipment and organisation in pre-war days was not such as to allow any adequate instruction in the subject being available for students. The complete reorganisation of the department is essential.

4. *Facilities for Bacteriological Investigation.*—Much consideration has been given by the assistant physicians in the course of the past year to this subject, and, as a result, a report, representing the unanimous opinion and recommendations of the assistant physicians, was recently submitted to their senior colleagues for their consideration. In this report it was pointed out that while the appointment of a clinical pathologist, five years ago, had greatly increased the efficiency of the work done in the institution, the great development of bacteriological science in relation to clinical medicine now necessitates a further extension of facilities for clinical investigation. This report included the following observations:—

"Bacteriological Investigation in Medicine.

"Every physician is daily brought in contact with many diseases, the cause of which is unknown, and the results of treatment of which are extremely unsatisfactory. As examples, we may cite rheumatoid arthritis, pernicious anæmia, certain forms of nephritis, and of disorder of the intestinal tract. The defects of our present knowledge of the diagnosis and treatment of these disorders, and of the conditions of their development, make it essential that increased facilities be obtainable for their more special investigation, and for the teaching of the students.

"There are many chemical problems in connection with the examination of pathological secretions—notably the urine, effusions into the pleural and peritoneal cavities, and cerebro-spinal fluid—as well as in disorders of respiration, blood conditions, and conditions of metabolism, that cannot be adequately observed under existing conditions. If the data required for a diagnosis according to modern methods are to be available, additional expert assistance from the chemical standpoint is a necessity.

"It is impossible for the present staff of the pathological department to overtake fully the investigation of problems which require extended observations. For this purpose it is necessary that the clinicians who require to make such observations should be provided with assistants for this purpose. It is suggested that the Infirmary Board should agree to appoint honorary officers, who should be graduates in medicine, with a recognised status. An appropriate name for these officers would be Clinical Observers. The officer would be appointed by the Infirmary Board on the application of a member of the clinical staff. His duties would be to investigate definite problems under the direction of the clinician who makes the application. The co-operation of the professors of pathology, bacteriology, or medical chemistry would be available in cases where the investigation involved the application of special laboratory methods, and they would direct the investigations in their respective laboratories. The clinical observer should not be responsible for routine observations in the wards.

"In addition to the assistant pathologist and assistant clinical pathologist, there should be an assistant chemical pathologist to assist the clinicians with the problems that arise in the diagnosis of cases requiring investigation from the chemical standpoint. The investigations would be carried out in the wards, side-room, clinical laboratory, and pathological department. Where necessary, further inquiries might be continued in the laboratories of the University and Royal College of Physicians."

The assistant physicians are of opinion that unless steps are taken to correct the existing defects in the equipment referred to above, the teaching of clinical medicine will remain unsatisfactory.

5. *Radiography.*—The general arrangements of the department call for revision in the interest both of the patient and the student. Amplification of the facilities for diagnosis and treatment are necessary, and increased opportunities for regular instruction of the students ought to be made.

6. *Ward for Alcoholism, Poisoning, and Mental Derangement.*—The

clinical material in this ward should be more utilised for teaching. Some arrangement is desirable whereby the University Lecturer on Mental Diseases might be associated with the Infirmary in a consultative capacity, and, acting in co-operation with the physician in charge, give an occasional lecture or clinique on the mental cases that bulk largely in the ward. This would tend to bring the subject of mental disorders into closer touch with general medicine. It is also desirable that the indoor arrangements for this ward should be reorganised, a special ward for incipient mental cases being established.

If the general scheme outlined in the foregoing, regarding teaching arrangements and equipment, is brought into operation, the efficiency of the medical teaching will, in our view, be greatly increased. In addition to this, however, there will accrue the further advantage of really useful clinical records being obtained. It is probably no exaggeration to say that the clinical records of the medical cases in hospital are, from the point of view of progress in medical knowledge, of small value. For reasons we have touched upon, they are necessarily incomplete, and therefore can be of little use, either now or in the future, as an aid to advancing our knowledge of medicine. In the discussion on Pathology an account was given of the admirable arrangements that were made by the pathologist for teaching the student to correlate the post-mortem appearances with the clinical findings. It would clearly be a great advantage to the teaching in the school if some uniform plan could be arranged whereby the clinical records of cases could be made more serviceable both for present need and for future reference.

DISCUSSION.

Dr. Mackie White.—In Dundee we look upon ourselves as an offshoot of Edinburgh. We try to carry out the traditions which were instilled into us so many years ago. My colleague, Dr. Stalker, and myself have had the teaching of medicine there for some years. Our school has about twenty-five to thirty students in the two final years, and we still adhere to the system of having medicine for the first time in the fourth year, with one exception, that recently during the summer term of the third year the elements of physical diagnosis have been taught—the groundwork which Professor Russell has so strongly insisted upon as being necessary to clear the way for the teaching of clinical medicine. During our time together Dr. Stalker and I have taken the seniors and the juniors for bedside teaching alternately. By this means we can to a certain extent differentiate in regard to the kind of instruction to be given in our cliniques. Besides the bedside cliniques we give one lecture a week to the whole class, and there, of course, the juniors have perhaps just to pick up what they can, because we cannot give the most elementary instruction to the seniors. At the same time one must always remember that in the seniors you meet at times the most appalling ignorance of facts impressed again and again upon them.

The papers we have listened to to-night seem to me to be extremely helpful in regard to the future of this school. The advantages of a small school like ours are evident enough, *i.e.* we know practically the capacity of every single student intimately, and are able in going round the wards or in bedside teaching to direct our instruction to a certain extent towards individuals. Of course real individual teaching is impossible, *i.e.* the kind of teaching that the house physician gets when he is on for six months with a visiting physician. The ordinary house physician will frankly tell you that he has learned more in three months than in all his course before. Just now, when so many of our young medicals are called away to the war, we have to use very largely the senior students as house physicians, to their very great advantage in some respects, although in others it is a disadvantage. I have been in the way of giving three or four beds to each of the seniors, for which they are held responsible, for which they get up the cases, describe them to the class, do all the investigations that the house physician ordinarily does, and follow them in fact to the time of their discharge. It is certainly very useful to the men, and it is a method practically carried out by Sir William Osler in the Johns Hopkins Hospital. He had a chance of organising the teaching of medicine in the Johns Hopkins University from the very start, and in his book *Equanimitas*—one of the most charming books in medicine—he describes how in the third and fourth years—the final terms then—he arranged the scheme of teaching. Of course it was done regardless of expense. He had graduate assistants such as they have in Germany—men who had devoted several years of their lives to hospital work—and he utilised the out-patients in the way adumbrated in the papers to-night. We give the out-patient instruction in the fourth year—many think it would be better in the fifth year, because it ought not to be taught quite so systematically as the bedside teaching of the wards. Osler, of course, had a very efficient bacteriological and clinical pathological department, every student having his seat and his microscope, with opportunities for doing all sorts of clinical pathological investigations which are so frequently lacking here. That is a thing I think we should aim at in Dundee. I imagine you do so here.

Professor Harvey Littlejohn.—The speakers to-night have to some extent forgotten that we are confined in a very important direction. Our curriculum is a five-years' one, and unless that time is increased it is not possible to get everything we desire into it. We must do justice as far as we can to the various compulsory subjects which are put in that curriculum by the General Medical Council. We agree, I suppose, almost *in toto* with the scheme sketched out by Dr. Matthew, and for post-graduate teaching nothing could be more admirable. But is it possible to utilise all the appliances suggested for the Infirmary in his paper in the teaching of the elementary medicine we have to give our undergraduates? I do not think it is. Our object must be to teach them, in the short space of time at our disposal, the essential facts of medicine, and try and make them as far as possible good, reliable general practitioners.

I do not think it very much matters in regard to systematic medicine—but this is subject, of course, to what the pathologist may say—whether it is in the third or the fourth year. At the special request of the teachers of clinical medicine to the Faculty the transposition of medicine was made from the fourth to the third year, one of the reasons given being that it would combine

better with pathology than did surgery in the third year. I personally agree that medicine is better placed in the third year, and that the student ought then to get an insight into the elements of medicine, which will be of great advantage to him afterwards in connection with his study of surgical cases. It is no argument to say that it is too early in his course, and that by the time the final examination comes he has forgotten it. He ought not to have forgotten it, because, though he has his systematic medicine in the third winter, the whole of his time thereafter is associated with clinical medicine—and clinical medicine *is* the teaching of medicine. Systematic medicine ought simply to be giving the student a general outline of various diseases. My idea of systematic lecturing is that the lecturer should be simply like a guide taking a number of people round a picture-gallery, devoting the greater part of the time to those pictures which are standards in art. He should point out the characters of all the pictures, but devote special attention to those which really may be taken as outstanding types. By this means the student would get a view of the whole subject, not sufficient to make him a complete physician, but sufficient to carry him on throughout the rest of his curriculum, and to be a material help in what one might say was the more advanced teaching which he gets when he attends clinical medicine. I, therefore, do not agree that in taking systematic lectures in the third year the student loses touch with the subject for his final examination; he continues the study by attending nine, and generally twelve, months of clinical medicine.

In regard to clinical medicine, had it not been for the war a great many of the suggestions made here to-night would have been carried out. Indeed the scheme mentioned by Dr. Gulland was in the minds of many of us long before it was put on paper, and it was the intention of the Faculty of Medicine to try and effect more efficient teaching all round, especially in the clinical subjects.

Too little is made of the great advantages which already exist for clinical medicine instruction. I do not think they are fully appreciated: we have in the Infirmary seven separate units, consisting of a chief physician, an assistant physician, a tutor, and house physicians. It is now a most important factor that each such unit is complete in itself, and that the number of students is limited as far as possible, so that a staff of at any rate four members have only a certain number of students under their control for clinical instruction. It is up to us, therefore, to see that those students are efficiently taught. It is a great pity that almost every student now, when asked what he is going to do after he graduates, says at once that he is going in for surgery. Why? Because he has been enthused by the surgeons. I think it is to be regretted that the physicians cannot get such a hold of the student of the present day as to make him as keen on the practice of medicine. I cannot help believing that this circumstance has something to do with the way that clinical medicine is taught. We are told in Dr. Matthew's paper that he wants more money spent on clinical apparatus, but he does not mention that £600 was paid by the university four years ago for providing clinical appliances, microscopes, etc., nor that special tutorial rooms at the request of the physicians were provided, equipped, and intended to be used in the elementary teaching of the students in testing urines and other chemical methods.

Dr. Gulland lays too much stress, in my opinion, for a professor of medicine, on examinations. We must not bow to the desire of the student and give him lectures or notes which are going to be useful simply for examination purposes. It is the duty of the teachers to give him the teaching that they think best for him, without any thought as to the examination, and when the examination comes, to make it a practical one which will test his knowledge fairly.

It is one of the great desires of the Faculty that we should get the Dispensaries to work in very close conjunction with the teaching of practical medicine in the university. It cannot be done without the loyal co-operation and help of the physicians who are attached to these institutions. It is a question of money, and very properly there must be some remuneration: one of the difficulties will be to provide sufficient remuneration. Still, I do hope that after the war we will be able to have a conference and try, all of us who are interested in the school, to put the Dispensary back again to the important place which it held in the practical training of our students.

Dr. Thin.—We have heard a great deal to-night about the improvement that ought to be made in the practice of physic. I speak from the point of view of the general practitioner, whose lifework it is to put into actual practice the lessons learned in the medical school, and to elaborate and improve them as he goes along. The scheme we have of giving one hundred lectures ought to be to a considerable extent scrapped. These lectures are a relic of mediæval times, when books were non-existent or were too expensive to be in the hands of students. Now, we have a number of quite good text-books, any one of which might be used by the students as the basis of the work. A considerable amount of time could be saved if the student were made to utilise the text-book as it ought to be used. The time now used for the one hundred lectures might with more advantage be spent in the hospital, the ward, the clinical theatre, or the out-patient department. Particularly I would emphasise the necessity of the senior student being made to attend the out-patient department regularly. The men should learn at the out-patient department the mode of treatment of the minor complaints and of the beginnings of disease, the earliest features of the diseases of which they see the full-blown article later on in the wards. The student ought to get some training in certain aspects of psychology, apart from what is concerned with the department of the insane. While we teach the student all we can about the anatomy and the functions of the body, we leave out absolutely the functions of the brain and mind. These functions are a most important factor in the origin of many illnesses and in the treatment of the individual when ill. There are a great many ailments which may be called functional diseases and hysterical conditions which are only to be elucidated along the lines of psychology. The method of attacking these at the present moment is no great credit to our profession.

Dr. Fleming.—I do not agree that we ought to have fewer than one hundred lectures, because I think that a course of systematic medicine should be a collection of types of disease which should be given to the student not necessarily before he enters the ward, but as a guide to him when he gets there, and no text-book can replace the remarks which a good lecturer on systematic medicine can make. If you are going to say that systematic

medicine is not necessary, then obviously systematic surgery is not necessary; systematic pathology—I do not know where you would end. You are going to eliminate the teacher except as a practical demonstrator. I used to believe that note-taking is bad, but I am certain that if you want to remember anything you will do so best if you write it down. I do not mean that the lecturer should dictate to the student, but I do think that good notes are essential. The association of the systematic and clinical teachers would be extremely valuable.

To my mind it is absolutely unsuitable that medicine should come in the third winter. If most of us were surgeons, I could see that surgery ought to hold the place it does in the fourth winter; but most of us are physicians, and unless we have a junior and a senior course of systematic medicine it is a mistake. Surgery appeals to the junior student, he likes putting on bandages and splints under direction, but the clinical teacher in medicine can also fascinate his students, and I do not agree that they are not enthusiastic about medicine.

As to case-taking, I believe that if in the Dispensary, where the student gets the chance of having a number of cases under his care, the Dispensary doctor's attitude was to see that all these cases had reasonable notes made of them before the student got his certificate of attendance, he would be doing a great service. For junior students the physical signs and symptoms in health should be the first ground for clinical work, and after that should come case-taking.

It is a pity that we have so many special subjects; many of them might far better be post-graduate. A specialist is apt to give the student far too much. It would not be a good thing to diminish the number of clinical lectures by making still more special subjects.

Dr. Chalmers Watson.—The unanimous views of the assistant physicians have been by arrangement so fully presented in Dr. Matthew's paper that there is little room for elaboration, but perhaps I may be allowed to enlarge very briefly some of the points made in that paper in the light of the interesting recommendations made by Professor Russell and Professor Gulland, and also of the remarks made by Professor Littlejohn.

It cannot be gainsaid that the status of the medical school depends infinitely more on the standard of efficiency set by the thirty clinical teachers of medicine and surgery than on the work of the relatively few teachers in the earlier systematic subjects. The first point that arises is, whether or not there has been any deterioration in the standard of efficiency in the school. When I compare the teaching and the work done by medical students twenty-five years ago—there were over one hundred students in Sir Thomas Fraser's clinique at that time—I am quite convinced that the interest which the students took in their work, the amount of time that they devoted to their practical work, and their practical efficiency on graduation, were considerably greater than at the present time. It is exceedingly difficult accurately to apportion the blame for this state of affairs. It is, in my opinion, due in part to defects in the teaching, and in part to the multiplication of classes and a lack of proper co-ordination of effort on the part of the teachers in relation to the student's curriculum.

There are numerous suggestions of a practical kind in Dr. Matthew's paper which, if effectively carried out, would in our view greatly increase

the efficiency of the teaching. In the opinion of the assistant physicians one of the main factors which have contributed to the lessening of the standard of efficiency in teaching is the absence of adequate facilities for the diagnosis of disease, and for its treatment from the modern standpoint. The crux of our position is embodied in the statement that, "whereas there have been many important advances in our knowledge of the diagnosis and treatment of disease in recent years, there has been no corresponding development in the equipment and facilities available in the hospital." Recent graduates of medicine, who have compared the facilities available and the teaching with those in other schools, have come quite correctly to the view that the teaching in their old school falls, in certain directions, materially short of modern requirements.

Professor Littlejohn has asked a very important question, viz. Is the scheme suggested in Dr. Matthew's paper a practical one for the teaching of medical students? In our view, it is not only possible but essential. One of the reasons for the absence of enthusiasm in medicine shown by medical students, to which Professor Littlejohn has referred, is the fact that the students are continuously seeing cases of chronic disease remaining in hospital for weeks or months, and then leaving very much *in statu quo*. We do not make adequate use of the methods of modern diagnosis as to the nature of these affections; we are too content to make use of the facilities for the diagnosis and treatment of these disorders which were available in our own student days. Personally, I do not wonder that the present-day young graduate wishes to direct his time and energy to surgery in preference to medicine.

We cannot discuss the subject of efficient teaching without reference to the subject of scientific research. Professor Gulland tells us that the modern text-book is no sooner issued than it is out of date because of the advances in modern medicine. In that statement we find a clear, a definite, and a correct expression of opinion, showing the interdependence of teaching and clinical research. Any discussion on the efficient teaching of medicine at the present time is therefore comparatively futile unless adequate consideration is given to this important subject.

I wish to refer to another point which bears directly on efficiency in teaching in the Edinburgh school. I think you will not get the maximum state of efficiency until you improve the status of the assistant physician. Until a few months ago the assistant physicians had no say whatever in the teaching arrangements of the school. Under such conditions a man of 45 or 50 years of age for the first time becomes an integral part of a system which he may think radically inefficient. Is it to be wondered at if he then succumbs along the line of least resistance—a line which is prejudicial to the interests of the school? This is a point of view which does not commend itself to our senior colleagues. Personally I can speak on it more freely because, but for the war, I would now be a senior physician. I am so impressed with the importance of this subject in relation to efficient teaching, that so long as the junior physicians make the claim for their complete inclusion on the Clinical Medicine Board, I will do everything possible to support their application. If it is competent for the committee of this Club to deal with any recommendations on the subject, I strongly urge that they put forward as a definite recommendation that lecturers of clinical medicine

be *ex-officio* members of the Clinical Medicine Board. I am perfectly sure that would make for much greater efficiency, and that it would tend to promote in a fuller degree the co-operation which is required. That could be done without in the slightest degree infringing the supreme authority of the chief of the ward.

In consideration of the views expressed by the assistant physicians in Dr. Matthew's paper as to the important influence which our defective equipment and outlook generally has had on the efficiency in clinical teaching, I would like to ask Professor Russell whether he agrees with us that efficiency in teaching necessarily involves equipment of a modern kind; that we have been too long content with a standard of equipment which falls below the minimum required; and does he agree that he, like us, has important responsibilities in regard to the correction of these defects as quickly as possible?

At the present time the Edinburgh school has a magnificent opportunity for reconstruction. That reconstruction will only attain a satisfactory level if a new atmosphere arises—one permeated by a spirit of progress. I have on many occasions discussed with my senior colleagues the problems raised in the paper, and I have never found any substantial difference of opinion between us. The curious thing is that nothing whatever is done either individually or collectively. In connection with all the schemes of reconstruction arising out of the war, a very important place must be given to medical education and the advance of medical science in its curative and preventive aspects, and if we are to make full use of our opportunities, we must seek to develop the new atmosphere required. If this is accomplished, the unique opportunities afforded the clinical teachers might surely go a long way to restoring the Edinburgh school to the proud position which it formerly occupied as the leading centre of medical education and medical practice in the kingdom.

Dr. Logan Turner.—I feel it my duty to put in a word for the greater utilisation of the younger men in the school as teachers. Twelve years ago, when I was appointed a senior surgeon in the Ear and Throat Department, I at once saw that that part of the teaching should be essentially developed, and I had not any hesitation in utilising all my junior staff and making them very nearly share and share alike with myself. I think Dr. Fraser will bear me out when I say that he has been utilised, sometimes perhaps more than he liked, in the teaching. Then as to the younger men having a share in the utilisation of the wards. We cannot expect men to teach and do the heavy work unless they also get the facilities they deserve. As regards the question of research, to my mind the good teacher must also be a man who conducts his own research, and in the Ear and Throat Department this has been carried out in a valuable way. One has not confined one's desire to encourage research in the assistant staff; the clinical assistants also as far as possible have been encouraged to do research work, and up to the outbreak of war they have contributed annually to the Reports of the Department. If this can be done in a small department, it can surely be done in the larger departments of the Infirmary. I hold that the school would benefit by reducing the size of the cliniques, by training men while they are still comparatively young into better teachers more fitted for senior posts.

Dr. Rainy.—I agree with Professor Russell that the senior teachers might

in ordinary times take a larger share in teaching the elements than they do. I have tried that with great advantage. We quite realise the importance of complete co-ordination; and I would only say that, as an assistant physician who, owing to various accidental causes, has worked under six chiefs in his time, the majority of these were quite willing to utilise one to the full. A little more systematising of clinical medicine would be an advantage. I was struck in Vienna with the way in which they managed to run systematic courses in clinical medicine and in the special subjects. Co-ordination and co-operation in the different wards might help us to a considerable extent in developing that side. We are too much individual units in the Infirmary. When I was attached to the Sick Children's Hospital I felt very much that there was a different atmosphere—that the staff, in fact, worked all the time as a whole.

There is a very definite place for the systematic lectures, but I do not know that the present system, to which we are more or less bound by ordinances and other things, is altogether ideal. I would much prefer, as in certain other subjects, to see medicine divided so that juniors might attend three days a week for thirty or forty lectures, and seniors attend two days a week; so that the juniors would get the fundamental details given them, and then the senior course could fill in gaps and treat of matters which would be much more appreciated by students of more clinical experience than third-year men can possibly have had.

With the paper by Dr. Matthew I am practically in accord. We do want to bring in the special departments—balneology, massage, and so on—and to make them much more practically in evidence for the students. Before long we may get a certain amount done in that direction.

With regard to the preference to surgery over medicine, it is dangled in front of students that in surgery the fees are bigger, which constitutes a definite point in its favour, but there is also the fact that somehow there is more of a feeling of progress in surgery of late years than we can claim in medicine. I do not think that will continue indefinitely, and I hope that before long the physicians will have their innings again.

In the ward for delirious patients, arrangements should certainly in some respects be altered. It does not follow by any means that the teaching of psychological medicine in that ward can be conducted by a man whose interests may lie in any other branch of medicine. It would be well to associate with him some man with special experience in work of this kind.

Mr. Miles.—Professor Russell very rightly regretted that the student did not reach clinical work until the third year, when he arrived in what the professor described as a "virgin state of mind" as to all matters clinical. Is it not possible that the student should enter the hospital somehow before his third year? It is absurd that after studying anatomy and physiology for two years he should arrive at the hospital knowing nothing whatever about the bearing of these things on medicine. Professor Russell said that the systematic lecture should be something very much better than a text-book; I would put it that it should be something very different from a text-book. Each has its proper *rôle* in the teaching of students. The lecturer should expound the text-book, and to that extent be better than it, but the two are essentially different. The taking of notes can be of little use; the student so often takes down the wrong things, and would get at the subject much

better from a text-book. Provide the text-book and expound it—there you have the proper combination.

Professor Ritchie.—The discussion to-night has dealt largely with two different things—the present teaching of medicine and its defects, and the ideal teaching of medicine. With regard to the first, we are undoubtedly at the present time handicapped in various ways—one of these being that medical students do not all commence their course at the same time. Some commence three months before others, and ultimately these two groups come together and dealing with them constitutes a serious practical problem. One of the things the committee of this Club will have to consider in their report is whether the time has not come for a reconsideration of this matter with a view to laying down one curriculum which shall be commenced at a certain time of the year, and which shall be followed in an orderly way throughout. One of the results of the present unfortunate defect is that, if the student commences his work in the summer term, he has practically nothing to do in his fourth summer, and a great many of our students—as is well known—go away from the university for three months because they have not sufficient employment here. Might not this summer be used for giving the men instruction in those special subjects as raised in the paper by the assistant physicians, thus converting what is largely at the present time a waste period into a period fruitful in turning out better clinicians?

Various speakers have raised the question of the fact that the students have to crowd too much work into a very brief space of time, and that therefore they have not the opportunities for clinical observation which they ought to have. I remember eight or nine years ago, when this subject was last discussed by the Club, that the committee, of which I was a member, had evidence of a great change which had come over the practice of students of the school since they (the members of the committee) had been students themselves, viz. that the students did not spend so much time in the Infirmary in the evening as formerly. I have not heard whether this has been altered, but I fancy not, and I think that the Managers of the Royal Infirmary cannot be considered entirely blameless in the matter; nor can the teachers of the medical school be considered blameless, in that at the time when the managers limited the hours of attendance of students in the evening they did not make a strong protest against the change. When I was a student we spent long periods in the Infirmary in the evening. In many respects they were the most fruitful periods of our clinical work; we came round and made observations for ourselves on the patients, and this tended also to make the position of the house physician or house surgeon a more important one, because he was expected by his chief to take an integral part in the teaching of the students in directing them in these observations. This point should be borne in mind with a view to some return to the old system. The argument that the patients suffer will not hold water. The patients used to be glad to see the students in the evening; it relieved the tedium of their existence to a certain degree, and I am certain that when the wards were properly under the control of a competent house physician, no harm resulted to the patients.

Some of these points may be remedied to a certain extent, and, I hope, more time given to the student in his earlier years for his clinical work and for following up those developments which have been referred to in

Dr. Matthew's paper. I trust that the earlier part of the course may be lightened of some of the scientific work, and that we may gain in that way sufficient time, even in the short period of five years, to send out the student a more competent general practitioner than is the case to-day. This is a matter which requires immediate attention. It is a uniform experience that, so far as the scientific teaching of medicine is concerned, the medical student of Edinburgh still goes out into the world probably the best equipped student as compared with any other of the medical schools.

With regard to what might be called the ideal course in medicine, we all agree that the lines laid down by Dr. Matthew in his paper are the lines which must be followed in the future development of the school. We must have better equipment and a better organised system of the teaching of special subjects. I do not think it is inconsistent with our turning out general practitioners that we should give them a great deal more experience of special methods than we do at present. Certainly the development of such a scheme as Dr. Matthew has sketched would inevitably lead to a greater development in research in medicine in this school, without which development the health of the school cannot be maintained.

At the present time there are two great obstacles to the development of the school. The first is the question of money. When the proposals brought forward by the assistant physicians were originally submitted to the Board of Managers of the Royal Infirmary, the managers were in the greatest sympathy with them. If they had had the money they would undoubtedly have proceeded at once to the reconstruction of the medical electric department, to the reconstruction of the balneological department, and they would have provided a department of physical therapeutics. But it was pointed out that to embark upon this scheme would probably require £60,000, and the managers simply had not this money, and saw no prospect of getting it. The second is the size of the school. That is a difficult problem. There is no doubt that the Edinburgh school would be more efficient if it had fewer students. The clinical facilities in Edinburgh are, after all, limited. Further, the teaching staff of the Infirmary must, from the fact that the population of Edinburgh is not very great and from the fact that Edinburgh is not an industrial centre, be drawn from only the limited number of men available for teaching posts, so long as such men must rely on private practice for a livelihood. If this school is to become the greatest medical school in the British Empire, we must take such steps as shall result in our getting, not an increase of numbers, but an improved type of students into the school. We are all at one in believing that the time has come when fresh developments must be made, and the discussion to-night has laid down in a broad way the lines that those developments must follow.

Dr. C. B. Ker.—Do Dr. Matthew and the assistant physicians think that the addition of extra side-room work, with perhaps more or less complicated apparatus and things of that sort, will not necessitate a longer curriculum, because some of us think that there is little enough time, so far as we can judge, for purely clinical and bedside instruction? From my own experience, my view is that the student is sometimes apt to get hypnotised by elaborate side-room methods to the exclusion of the patient himself. We should all be glad to see an extension of the things the assistant physicians are asking for if they do not consist in an addition to the curriculum. I think if there

is any subject in which the whole hundred lectures are required it is medicine.

Dr. James Miller.—One has come in contact with case-taking as a resident, and more recently in the department of morbid anatomy under the new system of teaching that subject, and one's conclusion in regard to the taking of cases is that it is unsatisfactory. That results from two main causes —one a want of interest on the part of the student himself, and the other a want of superintendence on the part of someone skilled. The superintendence which he gets is that of the house physician, unless his case comes up for a clinique, when it gets criticised by the physician; yet that case will form practically the only record which there is for the purposes of the Infirmary. The suggestion I would make as regards this state of affairs is first of all that the students should have a certain number of cases to take, and the marks they get for them will count in the class of systematic medicine and in the professional examination. Further, that associated with the case-taking there should be a summary or critical survey of the whole case co-ordination—the pathological, clinical, and therapeutic aspects.

Dr. Ivy Mackenzie.—Professor Russell began with a clear and simple exposition of the method in which the subject ought to be taught, and we have wandered from that into the region of administration. It would be a very good thing for any medical school to be organised along the lines suggested by Dr. Matthew; but I am not sure that it would be of the greatest benefit to the students, because the student ought to be taught only the elements of medicine and the method of looking at medical problems very early in his course. I do not see why that should not begin in the first year of medicine. A student ought to be saturated with the impressions that come from looking at sick people, and that cannot be begun too early in his course. He ought to be taught very early how to look at the pupils, at the skin, at the respirations—the things that the nurse has to put down in her day and night report. Any physician who has a good sister in a ward knows how much she knows about medicine without knowing anything about the technical terms used in pathology.

With regard to the question of systematic lectures, looking back on my own experience, I remember that one of my lecturers held his ordinary clinical lectures two or three days a week. He then gave his special systematic lecture, and in it he dealt in a systematic fashion with the subject which he had been demonstrating in its minute details during the rest of the week. That is my idea of systematic work. Dr. Gulland could not go over the subject in three hundred lectures in a way to satisfy himself. In a few lectures he has to deal with the subject in a manner which will produce such an impression on the student that when he goes out into the world he will have a definite method of looking at illness.

Dr. Thin suggested that the students ought to be taught psychological medicine. That is a most important thing. Psychological medicine as a rule is devoted to people who are hopelessly insane, and the student is not sufficiently impressed with the fact that there is a very definite distinction between disease and illness, *i.e.* that an anatomical change is not reflected every time in the same form of illness, that every complaint referable to an anatomical change has first of all to come through the consciousness of the sufferer; and the students in the practice of their art ought to be taught that

it is their business to connect the nature of the illness with the brain, through which it comes. The psychological element of suffering comes into the most chronic maladies.

With regard to the relation of pathology to clinical medicine, I think, speaking from the point of view of clinical medicine, that on the staff of our wards there ought to be one member definitely associated with the pathology department. It is the case in some of the London hospitals that one of the juniors takes the assistant pathological work and helps the pathologist in the post-mortems that come from the wards; he assists the professor of pathology, and demonstrates to the students the relations between the pathological changes and the clinical phenomena observed in the wards.

Professor Lorrain Smith.—The teaching of physiology might as far as possible be brought into the Infirmary and brought to bear on the cases there, so that it could be a real introduction to medicine. The same should be the case with anatomy and pathology. We have tried to carry out this co-ordination lately by making the main part of our course the teaching of how the story of disease in a given case is to be read in pathology in correspondence with the clinical observations and history of the case, making the study of pathology as far as possible an introduction to the subjects of medicine and surgery. By thus co-ordinating the work of these departments a great deal of introductory matter could be got over, and physiology, anatomy, and pathology could be made more interesting to the students, who would arrive at medicine not unfamiliar with the living patient. We have found in pathology that systematic lectures are of comparatively little importance to the student until he has a basis on which to build. To give a course of systematic lectures, and say, "Those are the general principles; go and apply them," is more or less a futile effort in the direction of teaching. We have found it more successful to give the men a very short introduction to the subject, and then send them to study that subject under expert teachers in living cases. Having studied it so, they come back and listen to a systematic lecture such as that to which Dr. Ivy Mackenzie has referred. I should like to suggest that in teaching pathology and medicine together we should have the co-ordination which I think every teacher has mentioned between the wards and the pathology department, the physiology department—indeed, every department possible. We should have our introductory course of lectures, say on the heart, and then adjourn to the wards to study heart cases there, and after our students have seen a series of heart cases both pathologically and clinically, we should reassemble the matter in their systematic course and expound what science has to say in the interpretation of these cases. I should like to hear what Professor Russell and Dr. Gulland would say to this method of teaching. As for reading, of course there is a large percentage of men who stubbornly refuse to read. But the better men seem to read everything: one is sometimes overwhelmed by the amount they get through. I firmly believe that, without providing the concrete basis on which to build systematic teaching, systematic teaching is to a large extent a futile effort as far as most of the students are concerned.

Professor Russell said in reply.—There was quite a difference of opinion as to the transposition of medicine and surgery in the curriculum. My experience is that this new arrangement has not been difficult. But that is perhaps because I have the advantage of having been trained as a pathologist

as well as a physician, and that I never think of teaching medicine without in the first place clearly, however briefly, pointing out the pathological condition that is giving rise to the symptoms and to the physical phenomena.

The alteration suggested by Dr. Gulland is a good one, viz. that systematic medicine might be broken up into two courses, and that there might be a rapid survey of the various systems during the first term that the student is at clinical medicine.

With reference to Dr. Ritchie's remarks, there is a great deal to be said in favour of the University Court determining that students should begin their course either in winter or in summer. I say, let them begin in winter. The student who begins in winter and has done human anatomy comes to zoology with a much wider understanding and derives more benefit from it. They might begin their clinical medicine in the summer after the second winter. With a knowledge of physiology and anatomy, and with very elementary instruction in pathology, there is not much difficulty in teaching them physical signs during a single term. I lay strong emphasis upon the fact, however, that that cannot be done to a class of more than twenty or twenty-five. In the old days we went a great deal more to the Infirmary in the evening. The time of the student was not nearly so occupied as it is now. My contention has always been that with the suggested extra year much more might be done in this direction. The enthusiasm of the men for surgery has been very largely the result of the enormous advance made in abdominal surgery, which has overshadowed any advance in medicine since Lister's introduction of antiseptic medicine and surgery. Also the operative procedure appeals to the student because he likes to use his hands. But I can assure you that my students have been very enthusiastic this winter, owing perhaps to the intensive teaching in medicine that I have been able to give them during the first term, and I shall be very surprised if I have not given them such a view of medical methods and systems as will keep their fancy attracted to medicine instead of drawing them away to the glories of surgical operation.

Dr. Gulland said in reply.—The student will read if you interest him in the subject, but he will not deliberately read through a text-book for the sake of mental improvement. It was interesting to me to find that the assistant physicians and the Faculty have come to practically the same finding as to the way in which the services of the assistant physician should be utilised. As regards the systematic teaching, I should be thankful to have the number of lectures diminished, but I cannot see that it is altogether necessary to have a separate course on dietetics. Medical ethics are taught by the professor of medical jurisprudence. As regards the question of hospital equipment, the physicians are entirely in sympathy with the assistant physicians. There are a great many things in the matter of equipment that must be done.

The co-ordination of subjects as suggested to-night is a delightful prospect. The real difficulty just now with the teaching of physiology and anatomy is that the really important points are not impressed upon the students. That the anatomists should have the long time that they do have, and succeed in getting no more than they do out of the students is unfortunate, and the same is true of physiology. I think the teaching of pathology is most admirable, but my point is this, that you make it so interesting that it draws the students' attention away from clinical medicine.

Professor Lorrain Smith.—It is directing it towards it.

RECENT ADVANCES IN MEDICAL SCIENCE.

OBSTETRICS AND GYNECOLOGY

UNDER THE CHARGE OF

A. H. F. BARBOUR, M.D., AND J. W. BALLANTYNE, M.D.

Symphysiotomy.

Dr. G. Fieux of Bordeaux (*Gaz. hebdom. d. sci. méd. de Bordeaux*, 1917, vol. xxxviii. pp. 170-174) does not hesitate to stand forward as the champion of symphysiotomy. He was busily protesting against the too complete occupation of the obstetric field by the Cæsarean section before the war broke out, and since then his enthusiasm for the French operation of symphysiotomy as against the pressure of the more Germanic procedure of the uterine section has in no way been chilled. He has no doubts that the Cæsarean section, modernised and improved, has rendered and will render incalculable service, but there was (before 1914) a risk of its becoming too much the obstetric maid of all work ("la bonne à tout faire"). Dr. Fieux goes even further, for he champions symphysiotomy against pubiotomy; he is in no way alarmed by the bogey of the articulation of the symphysis pubis; for him section of the pelvis means symphysiotomy. He is therefore far from the position of the American obstetrician who declared that symphysiotomy was now an operation of solely historical interest, and he appeals to his French fellow-countrymen to give back to it the position which it ought reasonably to occupy. Whilst, he declares, the Cæsarean section leaves the pelvis unchanged, it mutilates the generative organs; pelviotomy, on the other hand, always improves the pelvis and it preserves the anatomical and physiological integrity of the generative organs—a detail to which the obstetrician cannot be indifferent.

In support of his rather startling opinions Dr. Fieux relates in detail six cases of contracted pelvis in which symphysiotomy was performed; in one of these (the sixth) the operation was carried out before labour began (ante-partum symphysiotomy). The first case was that of a woman with a contracted pelvis who had had three full-time labours with forceps and resulting in dead-born infants; symphysiotomy gave her a living child weighing 3260 grms. In the second case two difficult labours with forceps gave two dead-born children, whilst symphysiotomy in the third confinement allowed a living infant weighing 3640 grms. to be easily born. The third case was that of a woman whose first child presented by the head and was still-born; the second came by the breech a little while before term and was extracted; the third pregnancy was completed by symphysiotomy after forceps had been twice applied, and the child died two days later from head injuries

sustained during the application of the forceps. The fourth case was particularly interesting: a woman was sent into hospital after having had forceps applied thrice outside; symphysiotomy was performed and a child weighing 3260 grms. was extracted alive, but died four days later from a forceps wound; in her next confinement she benefited from the former symphysiotomy, for she gave birth in ten minutes to an infant weighing 3290 grms. The fifth woman lost two infants by reason of pelvic contraction; then by means of symphysiotomy she easily gave birth to a fine boy weighing 3650 grms. The sixth case was one of ante-partum symphysiotomy: the woman was syphilitic, and lost two dead and macerated fœtuses at the eighth month; then she gave birth to two infants at term killed by forceps, the pelvis being contracted; then in the next pregnancy Dr. Fieux performed symphysiotomy during the last fortnight, and on the next day labour came on and a living boy weighing 2970 grms. was easily expelled. Dr. Fieux is therefore within his rights when he claims for symphysiotomy a place in present-day obstetrics, all the more as he narrowly limits its range of usefulness. The fœtus must not be excessive in size, and the available conjugate of the flat pelvis must measure between 9 and 10 cms. ($3\frac{1}{2}$ to 4 ins.). Restricting the operation to these pelves alone he claims that pelviotomy (*i.e.* symphysiotomy) allows the expulsion or extraction of the fœtus without violence, with a separation of from 4 to 5 cms.; that it does not expose the patient to the risks of vaginal, vesical, or urethral tears; that it does not wrench the sacro-iliac joints or interfere with standing or walking afterwards; and that it may play the part of an operation of prevention for dystocia in future confinements, avoiding the cares and risks of operations intra-partum. Within these limits symphysiotomy is an easy operation, with a mortality which has been *nil* in Dr. Fieux's hands (twenty-one cases).

All obstetricians, it may safely be said, will not agree with Fieux as to the general position which symphysiotomy is likely to hold in the future, but all will be interested in the plea which he advances for ante-partum performance of it. It is something—it may be a great deal—to separate the symphysiotomy from the labour. When done apart from labour, the section of the symphysis can be carried out rapidly and simply ("like a tenotomy," says Fieux), the parts can be separated to about 4 cms., they can be easily sutured together, and retro-symphysial bleeding is hardly to be feared. The operation wound is not exposed to infection, and, when the labour occurs, eight to fifteen days later, it is set free from all operative complications. Certainly the operating obstetrician will require to give thought to the ante-partum performance of this and other operations; there may be an unexplored field here which will repay investigation and exploration. That symphysiotomy, however, is to be the operation of choice is another matter.

Radium-Therapy in Fifty Cases of Uterine Cancer.

Drs. Mario Ponzio and Gian Giacomo Maiolo (*Ann. di ostet. e ginec.*, 1917, ann. xli. pp. 99-133) give clinical details of fifty cases of uterine cancer, either inoperable in their nature or "returns" after hysterectomy, in which radium-therapy was employed. These cases all occurred between May 1914 and April 1917; but eight patients treated in 1917 were excluded, as it was premature to state the result. Of the remaining forty-two cases sixteen could be regarded as cured clinically and anatomically; that is to say, at a time varying from one to two years after the treatment, clinical inspection showed no return, and histological investigation showed no cancerous cells. In fourteen cases there was diminution in the size of the tumour or arrest of its growth, with a coincident amelioration of the general condition. In five cases there was improvement in the local and general symptoms, and in seven cases the data were insufficient to enable the authors to form an opinion as to the results. In the most successful cases the radium acted in two ways: first, by a direct effect, causing rapid diminution up to complete disappearance of the tumour, with histological as well as clinical proof thereof; and second, by an indirect action on symptoms, viz. the disappearance of pain, of metrorrhagia, and of fœtid discharge, along with an improvement in the general health. At the present time the view which seems to be justified is that radiotherapy is not a substitute for operation, but usefully works with it in the campaign against cancer. If early operation give a 30 per cent. chance of cure, and radiotherapy something of the same kind, the authors think that Chiladiti's hypothesis is not unfounded, viz. that the two plans combined may be expected to give from 50 to 60 per cent. of cures. The combined action of the X-rays, of radium, and of operative procedure, to which Jayle has given the convenient name of metachirurgical radiotherapy, introduces a much-needed ray of hope into the dark region of cancer treatment; and one trusts that the optimism of these two Italian gynecologists in Turin may not be confounded by the progress of the years.

Post-partum Eclampsia.

In his article on post-partum eclampsia Dr. Haugh of Copenhagen (*Arch. mens. d'obstét. et de gynéc.*, 1917, ann. vi. pp. 224-236) makes at least one statement which cannot be too often repeated. He says that eclampsia is so capricious a disease that a very large number of cases must be observed before the right to draw conclusions has been reached. Of course when one speaks of a disease being capricious one is not stating that it is really so, but only that in the absence of full knowledge of all its causes and modifying circumstances it seems to be so; and this is precisely the condition of eclampsia at the present time.

Therefore one calls it a treacherous malady. By grouping together twenty cases of post-partum convulsions observed by himself, along with sixteen unpublished cases by Leopold Meyer (also in the Copenhagen Hospital), Dr. Haugh finds that the prognosis for puerperal eclampsia is rather better than that for the ante- or intra-partum forms. There were no maternal deaths among these thirty-six cases. Certainly that is not the prognosis which some obstetricians would be compelled to give from their experience; and herein is yet another proof of the capriciousness of the disease. One is curious to know what the treatment was that Dr. Haugh employed. In half of the cases (ten out of twenty) he bled from the arm; the quantity varied from 450 to 1000 cms., but when more than 800 cms. were taken away, saline solution was transfused. The ten cases in which bleeding was not used were all less serious ones. Speaking generally, it seemed that the withdrawal of a quantity less than 600 cms. had very little effect upon the convulsions; in the seven cases in which the larger amount was taken there was a complete and immediate cessation of fits in four, whilst in a fifth there was only one further convulsion. Incidentally Dr. Haugh mentions that when Marie Antoinette had eclampsia, bleeding was had recourse to; it was not a grave case, there being only one seizure. In nearly all his eclamptic patients Dr. Haugh gave either morphine or pantopon, but he believes that the good effect obtained was due more to the chloral hydrate also given. He refers to, but does not seem to have employed, veratrum viride. In every case he administered a large dose (from 30 to 45 grms.) of castor oil as soon as possible. It was given through the tube after stomach washing had been thoroughly carried out. If the oil had no effect in from twelve to twenty-four hours a large enema of soap and water was given. These seem to have been the means used, and Dr. Haugh is to be congratulated on the good results obtained. It may be added that fourteen out of the twenty patients were primiparas; that sixteen were confined at term and four prematurely; and that none of them had difficult labours. Decapsulation of the kidneys is referred to, and rightly, because it is specially in the post-partum case that it has been most approved; but Dr. Haugh thinks it should be strictly limited to the patients suffering from anuria with a very high arterial blood-pressure. "In all the other cases the operation is both useless and dangerous." J. W. B.

OPHTHALMOLOGY.

UNDER THE CHARGE OF

W. G. SYM, M.D., F.R.C.S.E., AND ANGUS MacGILLIVRAY, M.D., D.Sc.

Ophthalmia Neonatorum and Gonorrhœal Conjunctivitis: Their Relation to the General Hospital.

At a symposium on Purulent Conjunctivitis in the Section of Ophthalmology, College of Physicians of Philadelphia (*The Ophthalmic Record*, December 1917), Dr. George de Schweinitz said that with certain facts they were well acquainted, to wit, that about 110,000 men, women, and children in the United States of America were, within the strict definition, blind. About one-fourth of this number need not have lost their sight. The causes of their misfortune were in large measure preventable. These 25,000 persons, by their blindness, deprive the country yearly of about $8,000,000 worth of productive labour. A very large proportion of these persons who ought not to have lost their sight have been deprived of it because of ophthalmia neonatorum, which was responsible for 25 to 26 per cent. of the blindness in eleemosynary institutions, schools for the blind, etc., and was the cause of approximately 8 per cent. of the blindness in most of the regions of the country. The ophthalmia neonatorum which caused this blindness was in most instances due to the gonococcus, which was responsible for this disease in about 65 per cent. of the cases. In general terms, measures devised and in operation for the elimination of this preventable cause of blindness were education, compulsory notification, punishment by law of the offenders against properly constructed legal regulations, and compulsory prophylaxis. Dr. de Schweinitz did not think it necessary to discuss the value of these measures. Each had its value, but that was not enough. Inasmuch as all properly managed hospitals at the present time had as part of their equipment a social service, the difficulties of the home treatment had been lessened, and the follow-up system had been productive of admirable results. But even the social workers and the follow-up system were not always able to control home treatment, and the evidence was strong that the best results were secured in wards properly constructed and conducted for the management of this disease, the best example being the Gardinar Ward of the Massachusetts General Hospital. But many hospitals had no such wards. Until comparatively recently in the city of Philadelphia, the Philadelphia General Hospital and the private rooms of St. Joseph's Hospital were the only places where cases of ophthalmia neonatorum and adult gonorrhœal ophthalmia were admitted. In other words, many hospitals had no accommodation for such cases, and had not got them now, and they would not admit them. Some hospitals, like the Preston Retreat,

the Maternity Hospital of the University and of the Jefferson Medical College, took care of the babies who acquired the disease when born in their own wards, but they did not accept cases of this character from the outside. Dr. Holloway investigated forty-two hospitals in Pennsylvania. Only two returned an unqualified statement that ophthalmia neonatorum patients would be accepted. Very properly he concluded that hospitals receiving State aid should be compelled by law to provides uitable accommodation for the victims of ophthalmia neonatorum. Furthermore, society, in the general sense of that term, which supports certain other hospitals not accepting State aid, should demand that they make similar provision. Committees existing for the prevention of blindness should force this issue with all the influence they can command, not only because it represented a real work of humanity, but only because it relieved the city ward in which the child might exist from a distinct menace, not only because with very little expense and with absolutely no danger to other patients in the hospital a room with a few beds could always be appropriated for these cases, with a nurse detailed when any of the patients were residents, but from a commercial standpoint the matter should be urged, because it meant a reduction of the blind from this cause, and therefore a lessening of the economic loss to the commonwealth in which these hospitals existed. Many computations had been made. In one State it had been ascertained that one hundred of the young blind had lost their sight from ophthalmia neonatorum. These young persons would eventually cost the State $300,000 for education, but the economic loss to the commonwealth, because of their lifelong dependence, would be many times that sum. Three years ago, in the State of Pennsylvania, $123,000 was appropriated by the commonwealth to four institutions or organisations for the blind, and approximately $32,000 of that money was devoted to the welfare of those who were blind from ophthalmia neonatorum. As Dr. Holloway had pointed out, it cost the State of Pennsylvania approximately ten times as much to educate one blind child as it did to educate one seeing child. These figures should be stored up in the memories of those who make the laws.

Dr. A. D. Whiting, medical executive officer of the Germantown Hospital, said that gonorrhœal ophthalmia and ophthalmia neonatorum were classed by the management of a general hospital as infectious venereal diseases. Hence they came under the ban of the rule of most general hospitals, which provided that no infectious or contagious disease should be admitted, or under the ban of the rule which prohibited the admission of venereal diseases. These were just rules when applied to the majority of general hospitals, and should be enforced, because these hospitals were not equipped to properly care for these cases without neglecting or endangering the patients generally considered suitable for admission to a general hospital. A general

hospital was supposed to be equipped to properly study, treat, and care for patients afflicted with conditions which in a general ward would not endanger the comfort or well-being of other patients admitted to such wards. They were not equipped, in a majority of instances, to properly study, treat, and care for patients suffering from communicable diseases which required isolation, with all that the term implied in the form of special exclusive nursing; special exclusive diet trays, with the care of the tray utensils; special exclusive disinfection and laundering. If not properly equipped, the hospital did an injustice not only to itself by admitting such cases, but an injustice to the other patients in the hospital and to the community in general, because it would be assuming obligations which it could not fulfil; it would result in removing from the other patients that protection against communicable diseases which was assumed when they entered a general hospital.

As a general proposition, the nursing staff of a general hospital should be equipped both as to numbers and attainments to care properly for each and every case admitted to the hospital. But the majority of hospitals had nursing staffs that were not prepared, especially in numbers, to care for cases that must be isolated, without either neglecting really suitable cases, or being so overworked that the general nursing deteriorated. This was specially so when a case of gonorrhœal ophthalmia was considered. According to some authorities the infection reached its height in about two weeks. During that time there had to be practically constant attention, both day and night. That meant that at least two nurses had to be taken from their regular duties and their time devoted solely to one case. One might imagine that the removal of two nurses from regular staff duty should not interfere with the routine work of the hospital. As a matter of fact, very few hospitals had a greater number on their nursing staff than was actually required to do the routine work. It might be argued that the hospital would have to care for a case of gonorrhœal ophthalmia which developed in the hospital. And the hospital would care for such a case to the best of its ability, hiring special nurses for the purpose, if necessary. But that did not signify that the hospital would seek trouble and incur expense by admitting a case for the care and treatment of which it was not equipped.

Another drawback to the admission of these cases, in most general hospitals, was the lack of isolating wards or rooms. If these cases could be cared for in a general ward there would be a greater leniency toward admitting them. The hospital had to protect the other patients from infection so far as possible, and therefore the management had to refuse admission until proper housing facilities could be afforded.

A very serious objection to the admission of gonorrhœal ophthalmia to a general hospital, in the minds of the lay management, was the

thought that it was a venereal disease. Possibly it would be argued that this stand of the management was due to prejudice or ignorance, or both. It was, nevertheless, a fact that a great many hospital managements held the same views. Stokes stated that in 1914 it was estimated that the city of London, with a population of 7,000,000, had 163 beds actually available for the care of sexual diseases. The Sydenham Royal Commission had found the same condition throughout Great Britain. Of thirty general hospitals in New York City, a recent investigation showed that only ten received recognised cases of syphilis in active stages, nine received adult cases of gonorrhœa needing hospital attention, and three received and treated active gonorrhœa in little girls. Thirteen of thirty would not receive medical cases with known syphilis or gonorrhœa. Until this prejudice, ignorance, or whatever it might be called, was overcome, lay managements would continue to exclude venereal diseases. It would have to be remembered that to the lay mind venereal diseases were loathsome and contaminating; many managements thought it almost criminal to allow, much less command, young pupil nurses to come in contact with such loathsomeness even in a professional way.

The only general hospitals that should admit cases of gonorrhœal ophthalmia were those that had a special ophthalmological department, with sufficient and suitably isolating rooms, and a large enough nursing staff to allow of special nursing without interfering with the routine work of the department or of the hospital.

Dr. Whiting believed that every general hospital pretending to maintain an eye service should be so equipped that all cases of gonorrhœal ophthalmia should be admitted to such a department.

Dr. J. M. Baldy, Chairman of the Bureau of Medical Education and Licensure of Pennsylvania, thought that if hospitals were not organised to take care of suffering people, no matter what the disease might be, then he did not know what a hospital was for. The only exception to this should be cases which had been pronounced by the health authorities to be so contagious as to be unsafe for treatment in a general hospital.

The Bureau of Medical Education and Licensure during its inspections of the hospitals of the State found it the almost universal rule to exclude all of this type of cases. This was frequently done by specific by-laws. The spirit of excluding this type of case from the general hospitals had grown from several causes—first, from the lack of proper information given by the doctors to boards of managers, and second, from a religious prejudice of the boards of managers. The old conception was that if a man sinned he should stand the consequences of his sin; but the trouble with this theory was that it did not take into consideration humanitarianism, the efficiency of the community, or the rights of the innocent. No more dangerous class of diseases

exists in any community than this group of venereal diseases, and no hospital manager can, with a clear conscience, turn such cases loose on the community. The hospital which commits this offence clearly fails to fulfil its obligations to the community and to those who contribute charity funds for the sake of the sick and distressed.

So far as purulent ophthalmia is concerned, the State builds institutions for housing these unfortunates after they have become blind, and spends large sums on educating them and caring for them, and yet this same State is asked to contribute millions of dollars a year to the aid of hospitals which turn loose this class of patients on the community to become blind and to become dependent on the State.

A. MacG.

NEW BOOKS.

The Diagnosis and Treatment of Venereal Diseases in General Practice. By L. W. Harrison. Pp. vii. + 482. With 100 Illustrations. London: Henry Frowde and Hodder & Stoughton. 1918. Price 21s. net.

Colonel Harrison prefaces his book by insisting on the immense national importance of the study of venereal disease from all aspects. He has provided an exhaustive account of venereal infections in both sexes, each region and tissue being taken up systematically and thoroughly. The text is well illustrated and fully indexed. A bibliography is lacking.

In regard to syphilis, useful data are given to show the correlation between clinical and serological findings, and their indications towards treatment. The author concurs in the belief that the majority of secondary syphilitics have abnormalities of the cerebro-spinal fluid. Full accounts are given of the administration of salvarsan and its congeners. The author states that at Rochester Row the intramuscular injection of neosalvarsan is favoured. The details of this procedure have not been perfected, but its greater simplicity and efficiency, compared with the intravenous method, are likely to lead to its more general adoption. The average duration of treatment of a soldier patient is now as short as twenty-five days, and the Wassermann reaction has shown that there has also been an improvement in the efficiency of treatment since arsenical compounds came into use.

The treatment of gonococcal infection in all its manifestations is fully described. In consideration of its results, and of the fact that the gonococcus is known to circulate in the blood, Harrison believes

vaccine administration to be a valuable adjunct to local treatment, and emphasises the importance of using an autogenous, unheated vaccine, and of commencing with small doses.

The volume forms a text-book of standard excellence, embodying as it does the results of a large and progressive experience; it appears at an opportune time, and is certain to be found of the utmost value alike by the general and the special practitioner.

Ambulance de l'Océan. By Dr. A. Depage. Volumes I. and II., July and December 1917. Pp. 648. With Numerous Illustrations. Paris: Masson & Cie. London: H. K. Lewis & Co., Ltd. Price 14s. per Volume. 25s. for Two Volumes.

In December 1914 the Belgians established at La Panne a military hospital, to which they gave the name of "Ambulance de l'Océan." The scheme originated with the Belgian Queen, and the hospital was originally placed and still remains under the direction of Dr. Depage. It is now an immense institution, comprising over 1000 beds, together with the most up-to-date and complete accessory arrangements. The position is unique in so far as that, while equipped on the lines of a base hospital, it is situated within 10 kilometres of the firing line. A special advanced abdominal centre of fourteen beds is established within 3½ kilometres of the front line trenches.

This institution has now published the first two volumes of a half-yearly publication which is intended to present some account of the scientific and practical work carried on in the hospital. The first volume contains an interesting account of the development and organisation of the institution. In addition there are some twenty-six original articles dealing with various interesting features of war surgery. It is impossible to describe each of these separately. Dr. Nolf's article on the treatment of pyæmia and septicæmia by the intravenous injection of 10 per cent. peptone is specially interesting. There are instructive accounts of general wound treatment, of cranial wounds, of the prophylaxis and treatment of tetanus, and numerous other subjects. Military work, both medical and surgical, is at present occupying so much attention that one welcomes any publication which throws light on the numerous problems which the present war has raised. These journals will prove most helpful and they will well repay a careful study. The author hopes to continue this publication as long as the military situation will permit.

Applied Anatomy and Kinesiology. By Wilbur Pardon Bowen, M.S. Pp. xii. + 316. With 189 Illustrations. Philadelphia: Lea & Febiger. 1917. Price $3.50.

This volume is the first of a Physical Education series, published under the general editorship of Major R. Tait Mackenzie, who has done so much for the advancement of scientific physical training in America, and in this country has given most valued help in the physical re-education and training of wounded and crippled soldiers. "Kinesiology is the science of bodily movement," says the author, and the volume is devoted to a careful description of the larger muscles of the trunk and limbs, and to the actions which they carry out individually and in groups. The classical work of Duchenne has left little to be added to our knowledge of the actions of the muscles of the body, but, as the author points out, many physicians and teachers are so little versed in kinesiology that they never see many of the problems of muscular action that are constantly presenting themselves, to say nothing of solving them, and in this volume there is an attractively illustrated account of the muscles from the standpoint of their action. Perhaps the most interesting and useful portion of the book is that which deals with gymnastic movements, with plays, games, and sports, and with the muscular mechanism of industrial movements.

At the end of each chapter is appended a series of questions and exercises, of delightful ingenuity. Here is one: "If a man whose work is pushing a lawn mower wishes to take exercise to prevent its causing faulty posture of the scapulæ, should he be advised to box, put the shot, row, or drive a fast horse?" The volume can be commended to those who are interested in physical education and in the treatment of any deformities due to exaggerated or defective muscular action.

Diseases of the Skin: Their Pathology and Treatment. By Milton B. Hartzell, A.M., M.D., LL.D. Pp. 753. With 292 Illustrations. Philadelphia and London: J. B. Lippincott Co. 1917. Price 30s. net.

This text-book covers the whole field of dermatology, including syphilis and the eruptive fevers. In his introduction the author states that the book is intended to be a text-book for the student, a guide for the general practitioner, and a book of reference for the dermatologist. It seems to us that it is too big and contains too many descriptions of rare diseases to be a useful book for students. On the other hand, as it contains no references to literature, it cannot be so useful to the specialist as it otherwise might be. But as a guide for general practitioners we can thoroughly recommend it. The descrip-

tions of the diseases are lucid and accurate. Considerable space is devoted to the etiology and pathology. The treatment is fully described and many useful practical suggestions are given. One of the chief features is the illustrations, without which no book on dermatology is complete. There are forty coloured plates reproduced from colour photographs. In a few of these the reds are rather too bright, but, on the whole, these illustrations are well chosen and give a very good representation of the conditions. The other uncoloured illustrations, of which there are 242, are almost without exception excellent. They will be found most helpful to the reader in visualising the distribution and minute details of the eruptions. There are numerous photo-micrographs of the normal skin and pathological lesions, which are beautifully clear and show great skill in their execution. There is a full index, and the whole volume is methodically arranged. There are wonderfully few minor errors such as inevitably occur in a new book. We congratulate the author on the thoroughness and completeness of his work and wish the book every success.

Scopolamine-Morphine: Semi-Narcosis during Labour. By William Osborne Greenwood, M.D.(Leeds), B.S.(Lond.). Pp. ix. + 120. London: Henry Frowde and Hodder & Stoughton. 1918. Price 6s. net.

This is the most practical and well-balanced monograph on the subject of twilight sleep with which we are acquainted. Any practitioner who wishes seriously to test this method of narcosis will find in this work a full account of the technique, and the author has taken the trouble to go carefully into many minor details which really contribute so largely to a thoroughly satisfactory success. To obtain the best results Dr. Greenwood accentuates the necessity of making every case an earnest and careful individual study; the doctor should be with his patient from the first injection till labour is completed; he should always employ the memory test; and the most important aim is to obtain *amnesia*, not analgesia. Under such conditions, with dosage properly adjusted to each case, "twilight sleep" is said to be absolutely safe for both mother and child. Our own experience does not allow us to make nearly such a dogmatic statement as this. The "personal factor" is a tremendously important thing where powerful drugs are put into the circulation and it is impossible to estimate it. There is a very diverse response to both morphine and hyoscine in different patients, and on this account, when it is least expected, one may have decidedly unpleasant anxiety over the new-born infant from both cardiac and respiratory sluggishness. There is an interesting note on

the use of omnopon-scopolamine instead of the ordinary morphine and hyoscine, and the inclusion of numerous charts and a good bibliography adds to the usefulness of a really excellent and attractively written work.

"Glaucoma": A Text-Book for the Student of Ophthalmology. By Lieutenant-Colonel R. H. Elliot, M.D. Pp. xvi. + 546. With 158 Illustrations. London: H. K. Lewis & Co., Ltd. 1918. Price 21s. net.

So much has been written about glaucoma, one of the most important and interesting morbid conditions of the eye, in numerous papers scattered through the literature of the last thirty years or more that a work such as the present will be received with appreciative welcome by ophthalmic surgeons. Colonel Elliot has collected from many sources an extensive body of evidence as to the nature, causation, diagnosis, and treatment of glaucoma. This material has been enriched by his personal observations and subjected to a critical review in the light of his unrivalled experience as an operator. It is safe to say that there is little known about glaucoma which is not touched upon in the present work.

A form of scotometer advocated by the author is described in an appendix. A commendable feature is the number of illustrations, of which there are 158, including an excellent coloured plate. A full index both of subjects and of authors' names completes the volume, which fills a long-felt want and is certain to meet with a deservedly popular reception.

NEW EDITIONS.

Pathology, General and Special, for Students of Medicine. By R. Tanner Hewlett, M.D., F.R.C.P., D.P.H. Fourth Edition. Pp. 631. With 52 Illustrations. London: J. & A. Churchill. 1917. Price 12s. 6d. net.

That this text-book has reached the fourth edition is of itself conclusive evidence that its value has been appreciated by students of medicine. The ordinary curriculum course in pathology has come to include a large variety of subjects in addition to the old restricted field of morbid anatomy. Experimental pathology, in which disease is studied

by methods the same as those used by the physiologist, has grown to such importance that it can no longer be put aside as a part of the subject which should be left to the specialist. Bacteriology also has come to such a position as a subject of instruction that special teaching is required to meet its claims. The extension of the course of pathology has also come from demands for practical experience of laboratory methods. Many of the methods applied in practice are taken straight from the laboratory, and they are apt to be applied without much success unless the practitioner has acquired some of the skill which comes from practical laboratory experience. The original simple course of pathology, in which the instruction consisted in demonstrating morbid changes in organs of patients whose case had been studied during life in the hospital wards, has grown into a full study of the patient's disease by laboratory methods. The work of the pathological department has been brought much closer to that of the clinician, and with this development the course of pathology for undergraduates has kept pace.

Dr. Hewlett has attempted, with much success, to encompass the requisite amount of instruction in a comparatively small volume. He must have often been puzzled with the question whether in the new edition a given bit of the subject should be extended, compressed, or left out altogether. Suffice it to say that he has succeeded in producing a book which, while it is small in bulk, yet contains the information which the student requires for his introduction to pathology. It would be no rash prophecy to say that on some future occasion when he sits down to prepare another edition he will find it impossible to maintain these limits, and he will have to commit himself to the task of writing separate treatises on the main branches of the subject

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A Manual of Bacteriology. By R. Tanner Hewlett, M.D., etc. Sixth Edition. Pp. x. + 769. With 31 Plates and 69 Figures in the Text. London: J. & A. Churchill. 1918. Price 14s. net.

The sixth edition of this well-known manual shows the text to have been considerably revised. Some sections have been rewritten and much new matter included. The most recent developments in methods for anaerobic cultivation are added. The sections dealing with agglutination, immunity, anaphylaxis, suppuration, and septic conditions have been extended. The account of cerebro-spinal fever is rewritten, as also that of paratyphoid and dysentery, while the colityphoid group generally have been elaborated. The importance of a clear conception of the part played by anaerobes in wound infection, gas gangrene, etc., under current conditions, has resulted in a considerable extension of this portion.

The chapter dealing with intestinal protozoa has been rewritten, including the spirochætal infections, while in view of the prominence now given to the subject in the attempt to control venereal disease, syphilis and the Wassermann technique have received fuller treatment. The demands of war medicine and surgery have in fact been a guiding factor in framing this new edition. The photo-micrographs are numerous and of high standard, and the text is excellent.

Diseases of the Stomach, Intestine, and Pancreas. By Robert Coleman Kemp. Third Edition. Pp. 1096. With 438 Illustrations. Philadelphia and London: W. B. Saunders Co. 1917. Price 28s.

The third edition of this book is one of the best treatises on the subject which has appeared, and the balance of the book is admirable. One cannot refer to any subject without finding it adequately handled, and the author is no less satisfactory on the scientific than on the clinical side. His fertility of resource in treatment is remarkable, and in many instances decidedly original. The account of Glenard's disease may be cited as a type of the way in which the author has performed his task. It is described with a wealth of clinical detail and numerous illustrations from X-ray photographs. Treatment is approached with a mind unprejudiced in any way. Each case is considered with special reference to its probable causation, and no rule-of-thumb line of treatment is permitted. Operative interference is not countenanced right away, but due trial is made of means to support and strengthen abdominal muscles, to increase intra-abdominal fat, and to correct intestinal and gastric disturbance or abnormality. If these means fail, appendicectomy and fixation of the cæcum are adopted, and the author winds up by saying that he has yet to see a dangerous resection operation needful for such cases.

Diseases of the Skin. By Sir Malcolm Morris, K.C.V.O. Sixth Edition. Pp. 770. With 82 Illustrations. London: Cassell & Co. 1917. Price 12s. net.

This work has an established reputation, and the present edition keeps well up to the former standards. The useful expedient of saving paper by printing the rarer diseases in small type has allowed enlargement without increasing the size of the volume. For those interested, the expansion of the section on venereal diseases will be found to be up to date, and replete with the author's wide experience. Lichenification is

a common manifestation and a sequel of many conditions, but the writer's plan of giving it separate treatment may perhaps lead to confusion.

Diseases of the Skin. By HENRY STELWAGON. Eighth Edition. Pp. 1309. With 389 Illustrations. Philadelphia and London: W. B. Saunders Co. 1916. Price $6.50 net.

EVEN in war time a new edition of this valuable work is welcome. Of the larger text-books it is among the best, and we have found it of great value for reference. Its usefulness is not alone in the main text but also in the full notes and references provided in small print. Most of the recent additions are concerned with rarer skin conditions, but occupational dermatoses (well illustrated), leprosy, pemphigus neonatorum, and eczematoid ringworm, are also more amply dealt with from the standpoint of recent research.

Blood-Pressure, from the Clinical Standpoint. By FRANCIS ASHLEY FAUGHT, M.D. Second Edition. Pp. 478. Illustrated. Philadelphia and London: W. B. Saunders Co. 1916. Price $3.25 net.

IN his preface to the second edition the writer of this book says: "In the following pages the purely scientific investigator should not be too critical of the conclusions drawn, but should allow the author considerable latitude, as throughout the chief effort has been to reduce a very large and complicated subject to a practical working basis, one which may be applied to everyday conditions, which, after all, is the chief concern of the practitioner." This statement expresses fairly accurately the character of the book. Unfortunately, the material presented largely consists of the work and opinions of others who have engaged in researches on blood-pressure, but is deficient in critical insight into the value of their respective contributions. The result is that one is furnished with a mass of information of varying reliability, through which one has to find one's way without substantial guidance. The literary references are numerous, but it is inconvenient that in chapter after chapter certain authors should be quoted with only reference to "*loc. cit.*" for, eventually, one becomes at a loss to discover where the original *locus* lies hidden. The 478 pages include twenty-four chapters covering the physiology and technique of blood-pressure, the influence of various diseases upon it, the application of blood-pressure studies to surgery, obstetrics, and to life assurance, and some short notes, which

might with advantage be very considerably extended, on the influence of drugs and of physical measures upon blood-pressure. The book as a whole affords a compendious summary of the views of the leading authorities who have made investigations in this branch of medical work.

Vagotonia: a Clinical Study of Vegetative Neurology. By HANS EPPINGER and LEO HESS of Vienna. Authorised translation by Drs. WILL MAX KRAUS and SMITH ELI JELLIFE. Second Edition. Pp. 93. New York: The Nervous and Mental Disease Publishing Co. 1917. Price $1.00.

"JUST as we may analyse with precision the diseases of the cerebral nerves in the light of anatomical and physiological knowledge, so when diagnosing diseases of the nerves which supply internal organs we must attempt to direct our thoughts along anatomical and physiological channels." This is the aim of the present monograph. Under the term vegetative nervous system are included all those nerve fibres which go to organs having smooth muscles, such as the intestines, blood-vessels, gland ducts, and skin, as well as to nerve structures which exert a secretory influence upon the glands. The authors employ *vagotonia* to include all those conditions in which, in addition to the manifestation of a functionally increased vagus-tonus and increased irritability in this anatomical system, there also exists a condition of increased sensitiveness to pilocarpine. In the space of a short review it is not possible to refer to the many facts and arguments which they adduce in support of their fascinating attempt to correlate an array of anatomical, physiological, pathological, and clinical observations. The subject is merely in its infancy and is one of such importance that no physician can afford to ignore it.

The Basis of Symptoms. By Dr. LUDOLPH KREHL. Translated by ARTHUR FREDERICK BEIFIELD, Ph.B., M.D.(Chicago). Fourth American Edition. Pp. xvii. + 540. Philadelphia and London: J. B. Lippincott Co. 1917. Price 21s.

THIS issue of Krehl's *Pathologische Physiologie* is based on the seventh German edition, and gives a clear idea of the disturbed physiology which accounts for symptoms in disease. It is essentially a clinical work, but the results of laboratory investigation have been freely utilised in explaining the causation of symptoms. In a prefatory note to an earlier edition Sir William Osler remarked: "How helpful it would be if clinicians had always at hand skilled physiologists, pathologists, and chemists to apply their most advanced technic to clinical problems,

and not the technic only, but the biological and chemical principles upon which medicine as an exact science is founded." This volume illustrates some of the advantages accruing from such collaboration. Such co-ordination of study is at present occupying the attention of the Edinburgh school, as recent issues of this *Journal* testify, and we have in the volume before us an illustration of some of the benefits which would result from it.

A Practical Treatise on Fractures and Dislocations. By Lewis A. Stimson. Eighth Edition. Pp. xx. + 946. With 514 Illustrations. New York: Lea & Febiger. 1917. Price $6.

Dr. Stimson's *Treatise on Fractures and Dislocations* is already well known, and the eighth edition embodies new matter, much of it influenced by the present war. There is nothing strikingly new or original, and some old-fashioned methods, such as the use of Malgaigne's hooks in fractures of the patella, occupy space, no doubt of value to the historian, but of little gain to the student and practitioner. There are many points of criticism. To take one at random, "Dislocation of the Semilunar Cartilages," the symptoms are dismissed in twenty-four lines, the differential diagnosis is not given, and the only illustration is that of a brace to prevent displacement, with about the same length of descriptive text as is devoted to symptoms. The illustrations are good and helpful, but the book is too big for the ordinary student of medicine, and practitioners would find it bulky and lacking in many of the minute details so helpful in isolated work. It is, however, of value to the specialist.

An Introduction to the History of Medicine. By Fielding H. Garrison, A.B., M.D. Second Edition. Pp. 905. Illustrated. Philadelphia and London: W. B. Saunders Co. 1917. Price 28s.

Dr. Garrison's *Introduction to the Study of the History of Medicine* is already well known to British readers and is a constantly used source of reference for personal and bibliographical information. No attempt is made to trace the continuous evolution of the healing art through all its ups and downs, but a clear account is given of each of its great periods. The author has availed himself to the full of the unrivalled material available in the surgeon-general's office at Washington, where he fills the position of principal assistant librarian. We commend this new edition to all who are interested in the subject. The numerous portraits of those who have contributed to the advance of medicine in all its departments add greatly to the interest of the volume.

A Manual of Physics for Medical Students. By Hugh C. H. Candy, B.A., B.Sc.(Lond.), F.I.C. Second Edition. Pp. 437. With Colour Frontispiece and 281 Illustrations in the Text. London: Cassell & Co., Ltd. 1918. Price 7s. 6d.

The second edition of this book is considerably larger than the first, and there are a few brief references in the new matter to the medical applications of heat, light, and electricity. In our opinion there might well be more of these, and every subject that has a well-defined physiological relation should have in a text-book intended for medical students that relation pointed out. In this respect the French books on medical physics are very superior to our own. In the index there is no reference to the eye, and though long-sightedness and short-sightedness are indexed and dealt with in the text, the general description of the eye as an optical instrument is meagre. In hydrostatics the application of Pascal's principle to the cases of the air-cushion and water-bed is not pointed out; the time-honoured diagram of the Bramah-press is omitted; insufficient emphasis is laid on the importance of time rate of working; the laws of friction are not definitely stated; and the mechanical advantage or disadvantage of levers is not treated of in regard to their orders and to the case of the human forearm. Much matter has been included with which it is useless to burden a medical student's mind: thus p. 130 is taken up with the calculation of the relation of the real and apparent expansion of mercury in glass; also pp. 317 to 320 might be omitted. These criticisms are by the way and do not impair the general usefulness of a book which is an extraordinarily concise compendium of the physical knowledge required by the medical student, but it would be to the advantage of the medical student if in the preparation of another edition medical collaboration were sought.

NOTES ON BOOKS.

THE popularity of Treves' *Surgical Applied Anatomy* (Cassell & Co., price 10s. 6d.) can only be enhanced by the new (seventh) edition now before us. It has been revised by Professor Arthur Keith and Mr. W. Colin Mackenzie, who have incorporated all that is necessary to bring it abreast of the most recent work. They have compromised with modernity so far as to give the terms of the new nomenclature along with those of the old.

We commend Dr. J. M. H. Macleod's *Burns and their Treatment* (Henry Frowde and Hodder & Stoughton) as an admirably clear and comprehensive exposition of the subject, which here includes dermatitis from high explosives. As one of the Oxford War Primers it is specially addressed to members of the services, but will be found useful by practitioners and house surgeons.

Anti-Malarial Work in Macedonia, by Willoughby and Cassidy (H. K. Lewis & Co., Ltd., price 3s. 6d. net). The authors expressly state that this small work is not to be regarded as a scientific treatise, but it is a record of sound practical anti-malarial work performed under service conditions, and contains much useful information regarding mosquitoes, their habits, and methods for their destruction. The hints regarding clothing and mosquito nets and other measures necessary for the protection of men against the attacks of mosquitoes are specially valuable. The book is written in such plain language that, while primarily intended for medical and sanitary officers, it is commended to the notice of all officers, men, and others serving in, or proceeding to, malarial countries.

The Systematic Treatment of Gonorrhœa, by N. P. L. Lumb (H. K. Lewis & Co., Ltd., price 4s. 6d. net). The author has in view the handling of cases at centres such as are projected by recent legislation, and refers to the disease as it affects the male. Symptomatology and diagnosis are dealt with, special stress being laid on the adequate examination of the urine. Vaccine treatment is very strongly recommended, both for acute and chronic stages, and for complications: he uses a mixed staphylococcal and gonococcal vaccine, and believes in giving large doses at short intervals; he has not found electro-chemical methods efficacious. The book is a concise and modern handbook of gonorrhœa in the male.

Rules for Recovery from Tuberculosis, by Lawrason Brown (Lea & Febiger, price $1.25), is written primarily for patients who have been under treatment in a sanatorium. It is intended as a guide for the continuance of the sanatorium *régime* when they return to their own homes. This, the second edition, is divided into a series of twenty-five

chapters, each of which deals with some particular aspect of the patient's life. An idea of the contents may be gathered from the headings of some of the chapters, as "On Alcohol and Tobacco"; "On Sitting Out"; "On the Body Weight," etc. The book is written in a pleasant style, and can be thoroughly recommended to intelligent patients.

Dr. A. C. Burnham's *Text-Book of First-Aid and Emergency Treatment* (Lea & Febiger, price $2), which is addressed to untrained first-aid workers and to advanced students who may be expected to practise the art under the conditions of modern warfare, admirably fulfils its purpose.

The Complete Medical Pocket Formulary, compiled by Dr. J. C. Wilson, and revised in this, its sixth, edition by Dr. Creighton H. Turner (J. B. Lippincott Co., price 10s. 6d.), is chiefly made up of a most useful collection of authenticated prescriptions, arranged under diseases. A list of newer remedies with their dosage and therapeutic actions is added, as well as various tables for handy reference.

What Every Masseuse Should Know, by Vera Waddington (Methuen & Co., price 2s. 6d.), contains drawings of grasps for joint movements, both for assisted and resisted exercises, with explanations. The drawings are good, and give a clear idea of the grasp required. This should be a useful book for the student of massage and for those whose knowledge of Swedish remedial gymnastics is shaky.

BOOKS RECEIVED.

AARON, CHARLES D. Diseases of the Digestive Organs. Second Edition (*Lea & Febiger*) dols. 7

BALLENGER, H. C., and A. G. WIPPERN. Eye, Ear, Nose, and Throat. Second Edition. (*Lea & Febiger*) dols. 3.50

BERNHEIM, B. M. Blood Transfusion, Hæmorrhage, and the Anæmias. (*J. B. Lippincott Co.*) 18s.

BURNET, Sir R. W. Foods and Dietaries. Fifth Edition (*Chas. Griffin & Co., Ltd.*) 4s.

CABOT, HUGH, Edited by. Modern Urology, Vols. I. and II. (*Lea & Febiger*) dols. 14.

FISHBERG, MAURICE, Translated by. Gley's "Internal Secretions." (*Wm. Heinemann* (*Medical Books*), *Ltd.*) 10s.

FORD, JOSEPH H. Elements of Field Hygiene and Sanitation. (*Wm. Heinemann* (*Medical Books*), *Ltd.*) 6s.

GHOSH, RAKHALDAS, the late. Materia Medica and Therapeutics. Seventh Edition. (*Simpkin, Marshall, Hamilton, Kent & Co., Ltd.*) 7s. 6d.

GREENE, CHAS. LYMAN. Medical Diagnosis (*Wm. Heinemann* (*Medical Books*) *Ltd.*) £2, 2s.

HUGGINS, G. MARTIN. Amputation Stumps (*Henry Frowde and Hodder & Stoughton*) 7s. 6d.

HURST, ARTHUR F. Medical Diseases of the War (*Edward Arnold*) 12s. 6d.

KLEEN, EMIL A. G. Massage and Medical Gymnastics (*J. & A. Churchill*) 21s.

LABORATORY METHODS OF THE UNITED STATES ARMY. (Compiled by the Division of Infectious Diseases and Laboratories) (*Lea & Febiger*) dol. 1.50

M'COMBE, JOHN, and A. F. MENZIES. Medical Service at the Front (*Lea & Febiger*) dol. 1.50

M'DILL, JOHN R. Lessons from the Enemy (*Lea & Febiger* dol. 1.50

MAY, OTTO. The Prevention of Venereal Diseases. (*Henry Frowde and Hodder and Stoughton*) 7s. 6d.

MEDICAL Annual, 1918 (*John Wright & Sons, Ltd.*) 10s.

MODI, Rah Bahadur JAISING P. Elements of Hygiene and Public Health. (*Butterworth & Co.* (*India*), *Ltd.*) Rs. 4.

MORISON, RUTHERFORD. Bipp Treatment of War Wounds. (*Henry Frowde and Hodder & Stoughton*) —

PLIMMER, R. H. A. Practical Organic and Bio-Chemistry. New Edition. (*Longmans, Green & Co., Ltd.*) 18s.

PRICE, FREDK. W. Diseases of the Heart (*Henry Frowde and Hodder & Stoughton*) —

TRANSACTIONS of the 39th Annual Meeting of the American Laryngological Association. (*Published by the Association*) —

TUTTLE, G. M., and PHELPS G. HURFORD. Diseases of Children. Third Edition. (*Lea & Febiger*) dols. 3.50

VEDDER, EDWARD B. Syphilis and Public Health (*Lea & Febiger*) dols. 2.25

WALLACE, CUTHBERT. War Surgery of the Abdomen (*J. & A. Churchill*) 10s. 6d.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES.

CASUALTIES.

Died on service on 5th July, Captain Robert Neilson Wallace, R.A.M.C.(T.).

Captain Wallace, who graduated M.B., Ch.B. at Edinburgh University in 1907, acted for a time as Clinical Assistant in the Ear, Nose, and Throat Department of the Royal Infirmary, and later practised in Edinburgh.

The Summer Graduation.

At the Graduation Ceremonial, held in the M'Ewan Hall on Thursday, 11th July, the Vice-Chancellor conferred the following degrees in Medicine:—

Doctor of Medicine.—Alexander James Anderson, Scotland, M.B., C.M., 1891 (late Capt., R.A.M.C.), "Some Observations regarding Chronic Neurasthenia in Men—more Particularly the Middle-aged Man—with Suggestions regarding Mode of Life and Treatment" (*in absentiâ*). Robert Balfour Barnetson, Scotland, M.B., Ch.B. (with 2nd class Hons.), 1904 (late Capt., R.A.M.C.), "Splenomegaly Complicated by Pregnancy and followed by Splenectomy." Robert Donaldson (M.A., Scotland (commended for thesis), M.B., Ch.B., 1904, "A New Method of War-wound Treatment (Biological)." William Blackley Drummond, Scotland, M.B., C.M. (with 1st class Hons.), 1891, "A Binet Scale for the Blind, with other Observations on Mental Tests." Robert Gardner, Scotland, M.B., C.M., 1896, "Chronic Intestinal Stasis." John William Keighley, Scotland, M.B., C.M., 1894, "Health Methods in the County Borough of Blackburn." Andre Lewis Krogh, Trinidad, M.B., Ch.B., 1911 (Capt., R.A.M.C.) (highly commended for thesis), "A Clinical Study embracing Certain Conditions induced by Toxæmic Agencies on the General and Cardio-vascular Systems, with special Reference to Deranged Function and Action of the Heart" (*in absentiâ*). Albert Liat Juay Lim, China, M.B., Ch.B., 1915, "Splenic Anæmia and Banti's

Disease." William James Porteous, Scotland, M.B., Ch.B. (with 2nd class Hons.), 1907 (Capt., N.Z.M.C.), "Trachoma and its Clinical Manifestations in North India" (*in absentiâ*). Henry Drummond Robb, Scotland, M.B., Ch.B., 1906 (Capt., R.A.M.C.) (commended for thesis), "An Account of the Sanitation of a Battalion with the British Salonika Expeditionary Force" (*in absentiâ*).

Bachelor of Medicine and Bachelor of Surgery.—Lal Singh Anand, India; Dorothea Isabella Baird, Scotland; Irving Augustus Beckles, Trinidad; Zacharias Johannes de Beer, B.A. (Cape), South Africa; Walter Tyrrell Benson, B.Sc.(St. And.), India (Surg. Prob., R.N.V.R.) (with 1st class Hons.); Cecil Blake, South Africa; Samson Boodoosingh, Trinidad; George Basil Brewster, Australia; Hendrik Jacobus Brink, South Africa; George Buchanan, Scotland (Surg. Prob., R.N.V.R.); Robert Edward James Burns, Australia; Ruby Thornton Carr, England; James Alexander Lumsden Cook, South Africa (Surg. Prob., R.N.V.R.); John Hamilton Crawford, Scotland (Surg. Prob., R.N.V.R.); Francis Xavier Maya Das, B.Sc.(Punjab), India; Edward Demetrius Dalziel Dickson, Turkey; Jean Dorothy Don, Scotland; Johannes Knockers van Oosterzee Duminy, South Africa; George William Cunningham Dunlop, M.A., Scotland; Joseph Edelstein, South Africa; Duncan Fergusson, Scotland (2nd Lieut., T.F. unatt., att. O.T.C.); Matthew John Gibson, Ireland (late Surg. Prob., R.N.V.R.); Hassan Ali El Girby, Egypt; Francis Gunaratna, Ceylon; Sukumar Dutta Gupta, India; William Henry Herberg, South Africa; Louis Constant Daniel Hermitte, Seychelles; Nathaniel Hirschman, U.S.A.; Frank Holmes, England (Hon. Capt., Seaforth Highlanders); Harry Morris Jacobs, South Africa; James Thomas Johnston, Ireland (Surg. Prob., R.N.V.R.); Aaron Klenerman, Russia; Denis Athelstone Knight, Barbados (Surg. Prob., R.N.V.R.); Donald Colin Lamont, Scotland; Rochfort Henry Saunders Langeveld, South Africa; James Bull Liggins, New Zealand (late L.-Cpl., Northumbrian Field Amb., R.A.M.C.); Teong Kyee Lwin, B.A.(Cal.), Burma; William Malcolm M'Alister, M.A., Scotland (Surg. Prob., R.N.V.R.); Robert Barr MacGregor, Scotland; Neil Macleod, Scotland (Surg. Prob., R.N.V.R.); James M'Nabb, M.A., B.Sc.(Glas.), Scotland; James Murray Macpherson, Scotland (late Surg. Prob., R.N.V.R.); Robert Cunningham Bruce Macrae, New Zealand; Mary Paulin Mair, Scotland; Moray Melvin, Scotland (with 2nd class Hons.); George Hilton Middleton, Scotland (Hon. Lieut., R.F.A.); Joyce Clementine Blackwood Mitchell, South Africa; James Sebe Moroka, South Africa; Thomas Burns Moyes, Scotland; Adrian Johannes Myburgh, South Africa; Henry James Parish, Scotland (with 2nd class Hons.); Hugh Steel Percival, Scotland; Joseph Rauch, South Africa; Gertrude Madeline Violet Richardson, England; Dorothy Anderson Robertson, Scotland; Japie Harold Leopold Shapiro, South Africa (Surg. Prob., R.N.V.R.); Charles Simpson, Scotland; Frank William Simson, Australia; David Williamson Sinclair, Scotland; Janet Sounnes Smith, Scotland; Mul Raj Soni, B.A.(Punjab), India; Marguerite Robertson Stirling, Scotland; May Laurie Walker, M.A., B.Sc., Scotland; Robert Wallace, Ireland; Ulric Gaster Williams, New Zealand.

The following awards were made in the Faculty of Medicine:—

The Ettles Scholarship—Walter Tyrrell Benson, B.Sc.(St. And.), M.B., Ch.B. (Surg. Prob., R.N.V.R.). *The Beaney Prize in Anatomy and Surgery*—

Johannes Knockers van Oosterzee Dummy, M.B., Ch.B. *The Mouat Scholarship in the Practice of Physic*—Harry Raephal Goldberg, M.B, Ch.B. *The Conan Doyle Prize*—Harry Morris Jacobs, M.B., Ch.B. *The James Scott Scholarship in Midwifery*—Robert Edward James Burns, M.B., Ch.B. *Scottish Association for Medical Education of Women Prize*—Marguerite Robertson Stirling, M.B., Ch.B. *The Dorothy Gilfillan Memorial Prize*—Joyce Clementine Blackwood Mitchell, M.B., Ch.B. *The Pattison Prize in Clinical Surgery*—Robert Lightbody Galloway. *The Cunningham Memorial Medal and Prize in Anatomy*—Robert Gordon M'Intyre (Surg. Prob., R.N.V.R.). *The Whitesde Bruce Bursary*—Jessie Eeles.

The graduates were addressed by the Promoter Professor Sir Richard Lodge, and at the commemoration service held in St. Giles Cathedral the Right Reverend George H. S. Walpole, D.D., Bishop of the Edinburgh Diocese of the Scottish Episcopal Church, was the preacher.

THE TRAINING OF THE STUDENT OF MEDICINE.

An Inquiry Conducted under the Auspices of the Edinburgh Pathological Club.

XXVI.—THE ESSENTIALS OF SURGICAL TEACHING.

By G. GREY TURNER, Major, R.A.M.C.(T.), Hon. Assistant Surgeon, Royal Victoria Infirmary, Newcastle-on-Tyne.

I greatly value the opportunity of being present at your discussion to-night, and I am looking forward to hearing the views of those of you who are the custodians of the great reputation for surgical teaching which the Edinburgh school enjoys.

If it is admitted that there must be some reform in the methods of surgical teaching, I realise that the conditions and the requirements vary. My remarks probably reflect the peculiarities and defects of my own school, while any suggestions are an expression of my personal hopes and aspirations. But as I take it this discussion does not concern the affairs of any one school, I have tried to define certain principles which may serve as a basis on which any teaching scheme may be founded.

Forgive me if I speak dogmatically on debatable points, for it is either from strong conviction or in order to furnish definite grounds for discussion. If my remarks help to stimulate a free interchange of opinion my object will have been served.

At the outset I am sure we all realise that the duty of teaching can only be superadded to the primary function of any great hospital, but a well-organised teaching scheme can only add to its efficiency for the cure and alleviation of injury and disease. As the State may have to help the teaching bodies much more handsomely than ever before, the public must be made to appreciate the great advantages of a Medical School, and we must never lose an opportunity of bringing this matter before the governing bodies. The war has furnished a splendid object-lesson, for what would the hospitals have done without the help of their students!

I take it that our object is to turn out good all-round men, who will take their places among the ranks of the general practitioners, the most important members of the medical community and often the flower of the profession. I hold very strongly that the education of those who wish to specialise in surgery ought to be entirely in addition to what is provided in the ordinary course and should be post-graduate. No one should be allowed to practise as an operating surgeon unless he can produce evidence of some such special preparation. This is due to the public, for at present anyone who has

passed a qualifying examination may essay to undertake the operative treatment of the most serious and important surgical conditions without any guarantee as to his fitness. The State must assume the responsibility of making the necessary regulations, but the teaching bodies must see to it that any graduate with special aptitude should be able to command a proper training.

Let us consider what we have to teach. When I think of the curriculum of the present-day student I am appalled at the number of subjects which he is supposed to master, and deplore the amount of detail with which he has to burden his mind. On account of the number of ancillary subjects which have been introduced—and made compulsory—during the last decade or so the limited time of the student is too much divided up and too little of it is available for what are admittedly the principal objects of study. So far as special subjects like ophthalmology, laryngology, dermatology, etc., are concerned it ought to be clearly recognised that no attempt should be made to teach them as though they were to be the life-work of the pupils, but only sufficiently to be an aid in general diagnosis and to prevent the commission of grave errors.

In every subject the student's task would be greatly lightened if we could so ground them in principles that their application would be easy and the knowledge gained would enable them to rely on their guidance rather than routine. There is a great tendency for students to "pigeon hole" their knowledge, and the methods of teaching largely in vogue rather exaggerate this fault. They think of inflammation in the appendix as something entirely different from inflammation in the lungs or the bones or the meninges. Or, even worse, they may only regard this process as an intricate subject taught in the pathology class and of academic rather than practical importance. I believe that a thorough grasp of the processes of inflammation is one of the foundations of surgical knowledge and that it should be fully taught from the clinical side in the surgical course. But the teacher must never lose an opportunity of pointing out that the essential changes in inflammation are the same and that differences depend largely on environment, and he must dispel the common idea that there is one variety for medical cases, another seen in the surgical wards, and yet another peculiar to the regions and diseases dealt with by the gynecologist.

Again, the student is too apt to look upon bacteriology as an abstract science, only to be studied in culture tubes and by high-power lenses, and it is our duty constantly to point out the relation of bacteria to disease processes and the behaviour of the living body in the presence of the invasion by bacteria or their products.

To take another illustration. If time be spent in thoroughly teaching the principles which govern the spread of malignant disease, then

this knowledge, with an acquaintance with the anatomy of the region affected, will enable students intelligently to anticipate what may be expected to occur and what symptoms will be produced in malignant disease affecting such different parts as the parotid, the œsophagus, or the prostate rather than that they should, by a pure effort of memory associated with some one paragraph in some particular book, remember what the progress signs and symptoms may be. Similarly, it is most useful to consider the phenomena of vascular obstruction and to show how it is in principle the same whether the part involved be the gut in a strangulated hernia, the testicle subjected to torsion, or a limb the victim of too tight a bandage. These examples are sufficient to show what I have in mind, though numerous others will at once occur to you, perhaps as better illustrations.

The next and natural step in teaching is the illustration of the application of principles to diseases of regions, but this becomes the easier in just so far as the principles are thoroughly understood.

Then comes the recognition of the changes produced by injuries and disease—the recognition of physical signs. For this we require to cultivate the faculty of observation, and the *Adventures of Sherlock Holmes* is a useful text-book for this part of the course. I often deplore the fact that the distinguished author did not apply his great talents to the production of a work on diagnosis. George Murray Humphry's *dictum*, "Eyes first, hands next, ears last" is a sound guide, and if I had my way I would have his words painted in large letters in a prominent place on the wall of the clinical theatre. The value of a good method cannot be overrated, and I always have more hope for the future of a man who arrives at a wrong conclusion by a good method than of he who makes a brilliant diagnosis without any method at all. Then we have to try to teach students to think correctly and to draw sound conclusions from the observations they have made. Surgical pathology must not be divorced from surgical patients, and should be taught in connection with the work of the wards and theatres. In the days when I was surgical registrar it was part of my duty to make the post-mortem examinations on patients dying in the surgical wards. This was an excellent practice, and I always regret that it has been superseded just when the aid and advice of a skilled pathologist can be so readily obtained. For the student the examination in the dead-house and its laboratories should be the end of the lesson which began in the out-patient department or the receiving-room. There was some point in the notice which the wag stuck up to the effect that "Professor —— will deliver the Clinical Lecture in the Post-Mortem Room. Subject: 'Cases from the Wards.'" I would also earnestly plead that the teaching of gross surgical pathology is as important and useful as the study of the section by the microscope.

At this stage let me say a word about the teaching of operative

surgery I have already spoken of the education of those who intend to practise as consulting and operating surgeons exclusively. For them a comprehensive course of operative surgery is essential, but for the ordinary qualifying examination it is absurd to teach, and to expect the student to be familiar with, operations which he not only never sees but which are very rarely performed and which none but the most expert will ever be called upon to undertake. For this examination students should be thoroughly grounded in technique, in minor surgery, and in emergency surgery. Operations on the cadaver have their value, but they must be carefully and systematically performed and very carefully supervised or they become worthless and a great waste of scarce and valuable material.

I would suggest that much more use should be made of the operative work in the out-patient theatres and casualty rooms, for these are the very operations which the practitioner is frequently called upon to perform. I would also make the surgeon responsible for the teaching of his dressers in minor surgery. Emergency operations should be carefully demonstrated, and I have no patience with the ritual which keeps the spectators at too long an arm's length when such important work is in progress. Students should also be much more familiar with the indications for operations and with the after-history of operation cases, for it will be more their business as practitioners to know when an operation ought to be carried out and the results to be expected than to be *au courant* with the steps and varying methods of their performance.

To teach surgery then on the lines indicated I consider it essential (1st) To introduce the subject by a limited course of systematic lectures on principles. (2nd) To bring the student into the closest possible touch with patients and with disease. (3rd) To ensure continuity in the consideration of clinical surgery. (4th) To ascertain that each student really understands what he is taught.

I have never been able to see any essential difference between systematic and clinical surgery. In its practical bearings all surgery is clinical, and though a certain number of systematic lectures is undoubtedly necessary to teach the general principles and to co-ordinate the students' knowledge of the diseases and injuries of regions, I cannot see any reason for a set number of lectures—even as many as a hundred—when such excellent text-books are available for reference. It appears to me that teaching by set lectures is a survival of a past age, when books on surgery were few, and when men had to depend largely on notes copied at the dictation of some famous lecturer.

Now let me explain what I have in view when I speak of the importance of continuity in teaching. I believe it to be essential that students should watch the progress of the patients from the time they

first apply to the hospital until they are either "relieved by art or released by death." The student cannot get a proper perspective of disease if his acquaintance ceases when the patient leaves the out-patient department for the ward or if it be first made in the operation theatre or afterwards. The best system of surgical teaching I have ever seen was that practised by the late Professor Theodor Kocher in his famous clinic of Berne. Every step in the diagnosis and treatment was elucidated before his class, and they were never allowed to lose touch with the patient during his progress through the hospital. Let us take as an illustration the case of a patient who came to the hospital complaining of difficulty in swallowing. The man was brought into the morning clinic and two students were selected to go into the case with Kocher as guide. On the first day a preliminary examination was made and the main points of the history were obtained while aneurysm and such conditions as gross secondary glands, etc., were eliminated. The further steps to be taken in the diagnosis were discussed and the patient was sent back to the ward. On the following day the patient again appeared, having been X-rayed with and without a bismuth meal and the larynx having been examined. The plates were shown and their value discussed. Bougies were then passed by one of the students under the direct guidance of the professor. The question of œsophagoscopic examination was dealt with, the method being explained and the instruments shown. Several points were illustrated by anatomical models and specimens from an adjoining museum. Finally, it was decided to perform gastrostomy, and the reason for the choice and the rationale of the operation were explained. On the morrow the students who had examined the case were present in the theatre when the operation was carried out, and on a subsequent day the patient was again brought into the clinic so that the whole class might see the gastrostomy and the process of feeding. Whenever possible, similar cases previously operated upon are shown, so that the class may be made familiar with the late results, and in the event of a fatal issue the organs are invariably brought into the clinic and explained by the professor. Of course each morning more than one case is shown and discussed, and it is often possible to deal with the whole subject there and then.

My fourth postulate presupposes the "Tutorial" class, a name unfortunately often looked upon as synonymous with "grind" or even "cram." It is the business of the teacher to see that his students thoroughly understand the subjects taught, and the principal use of the tutorial class is for revision and also for the teaching of such subjects as physical signs, bandaging, splints, instruments, etc., which can only be properly dealt with in small classes. These classes would be conducted by the assistants, but would be an essential and important part of the scheme.

To meet the requirements for teaching which I have outlined I believe it necessary to have special Teaching Clinics conducted on what is often called the continental plan, though I believe that it was originated in this city by Syme at Minto House. In addition we must certainly continue our own excellent system of education by clerkships and dresserships in the out-patient departments and wards, in this way fulfilling the requirements of my second postulate. All the students taking the surgical course would attend the lectures, demonstrations, and practice of the main clinic, but would also each act as clerks and dressers in the out-patient department and in the wards of the hospital generally and for the usual period.

The head of the scheme would be a Professor who would not only be an active teacher but the director of the teaching clinic. He should be a born teacher and educated to make it his life's work, and I would unhesitatingly declare that in the larger schools this post should be virtually a whole-time appointment. I say virtually, because I think it would not be fair to the professor or to the community to shut him out completely from consulting work, and that it would be better for the students if the man at the head should continue to have first-hand knowledge of the condition in which they would have to work. But his duties would only allow of his being called into consultation in very special cases, and there must be no question of competition with the men in active consulting work. So long as it is accepted in principle that the best of his energies and all the time necessary are to be devoted to the teaching clinic, then what private work he may do becomes a matter of easy arrangement. In some schools abroad the fees for any private work go to the funds of the clinic, and I suppose in return any patients are seen and operated upon in private wards. This I should look upon as an admirable arrangement, provided that, if especially useful, such cases might be brought into the clinic for demonstration.

But the duties of the clinic would come first and would occupy the whole of each morning, and the best part of the evening would have to be devoted to preparation, organisation, or study. The man to be at the head of such a clinic must evolve and should be ready for the post about the age of 40, having been some years in active surgical practice. He would be eligible for re-election after five years, and again after ten years, and would retire at 65 or sooner. The work of the professor would be exacting and arduous, and anyone who made it a success would sacrifice a great position and fortune that might have been his if the same energies had been devoted to his private ends. In order to leave the professor entirely untrammelled by the need of practice and unfettered by success—the hardest of taskmasters—he must be adequately remunerated and should never have to repeat that brave Hunterian saying about the "damned guinea," and indeed I

would like to think of him as in the fortunate position of the American surgeon who, to the request of the millionaire that he should "Come at once: money no object," was able to reply, "Cannot come: money no object." He must also be assured of a retiring pension, and of a good vacation each year, part of which he might be expected to spend in visiting other clinics at home or abroad, or in attending congresses, etc. He would be in entire charge of the teaching clinic, and, depending on the size of the school, would control from 100 to 200 beds. The clinic would require an operating theatre with its necessary appurtenances, and in close proximity a demonstration theatre capable of seating 200 to 250 pupils. This theatre must be fitted with every possible contrivance for demonstration purposes—epidiascope, cinematograph, lantern, blackboards, screen for diagrams, illuminating box for X-ray plates, etc., etc., and it must be possible to darken and lighten it in a few moments. But let it be clearly understood that these contrivances are merely to supplement the demonstrations on the living patient and never to take the place of actual clinical material. In the vicinity would be the laboratories, hand museum of type specimens, X-ray room, dark room for cystoscopy, etc., room for operations on the cadaver, library, and the professor's private room.

To carry out the work of the clinic the professor would require an adequate staff, probably two senior assistants who would rank as assistant surgeons, two junior assistants of the standing of surgical registrars in English hospitals, and two or more house surgeons and the proper proportion of clerks and dressers, depending on the number of beds.

The assistants should be allowed to engage in surgical practice, but they ought also to be paid, not lavishly but just enough to enable them to accept the appointments and to encourage them to work for the higher posts. British hospitals are greatly hampered by the paucity of junior assistants, and there ought to be numbers of posts each with a sufficient honorarium to enable men to wait and to work for preferment, while at the same time they may enter the ranks and engage in the competition for work "outside." This would greatly enlarge the training reserve of those who essay to become specialists in surgery and to be the lecturers and professors of the future. The increase of the numbers in training would tend to seek out those best suited for the teaching posts, while many would fall into other lines and would find before it was too late that they were better suited for some other branch of professional activity. The material for the clinic would be provided by a regular intake according to the scheme adopted in the particular hospital, and also from cases sent specially for the opinion of the professor.

The professor would give a short introductory course of systematic lectures on the Principles of Surgery but these would be illustrated by

cases from the wards whenever possible. From time to time the work seen in the clinic would be supplemented and co-ordinated by an occasional systematic lecture, but the greater part of the teaching would be clinical, and would be conducted after the Koeher plan. The professor would himself perform demonstration operations and would also deal with the more difficult cases. His assistants would be largely responsible for the routine operating and would work up the material for the clinical demonstrations so that the professor might be free for the more important cases and for his duties as director of the clinic. The assistants would also carry on the work in the absence of the professor, for in every way they would act as a "team." Time will not permit me to enter into all the details of the work associated with such a clinic as I have outlined. Nowadays the investigation of cases prior to operation is often complicated and exacting, and this work would be superintended by the assistants and would probably be subdivided amongst them. But everything would be available for teaching either in the main clinic demonstrations conducted by the professor, or in the smaller tutorial classes which I have mentioned. It would also be necessary to conduct special courses for those who wished to proceed to higher degrees after graduation.

But the appointments as clerks and dressers to the surgeons who are not connected with the main teaching unit must be looked upon as a most essential part of the students' education. Not all who hold hospital appointments are born teachers, but all can teach in their own way, and we want as many clinical teachers as possible in order to make the fullest use of the available material. The surgeons, relieved of their big classes, would have much more time to attend to the education of their clerks and dressers, and must look upon this part of their duties as of the first importance. In order to make the most of the Hospital Unit in the University the teaching must be more spread out. The morning might be reserved for the work of the main teaching clinics and the afternoons for the ward visits of the other surgeons and for their operations. The teaching in the main clinics would only be in term, but the classes for the clerks and dressers in the wards would go on the year round and without hardship, for the staff of each set of surgical wards would form a "teaching team" so that when the senior is absent on vacation the junior who takes duty for him would automatically carry on the teaching. It would indeed be a brain-cracking task to fit in the claims of the various teaching departments with one another, but there can be no insurmountable difficulties, and in a short time after the change evolution would come to our aid.

If the whole-time professor is accepted in principle, there are other ways in which the work might be arranged to the advantage of the classes. The plan I have outlined is purely tentative, but it would,

I am convinced, be workable and efficient. Of course it would be much easier to introduce such a plan into an entirely new school, but even long adherence to old-established practices, to say nothing of vested interests, could be broken down by goodwill and co-operation if it were once conceded that such a radical change is essential.

But if we relieve a man from so much of the turmoil of life we must expect his very best, and though the whole-time professor would be primarily a teacher he must be a worker in the surgical world and endeavour to keep his school in the forefront of progressive surgery, while at the same time he must cultivate the spirit of research among his pupils.

It is unfortunate that the general conception of research should nearly always be connected with special laboratories, expensive apparatus, numerous assistants, and animal experiments, and should foster the notion that nothing worthy of the name can be done without such aids.

Personally I have the highest regard, amounting almost to veneration, for the work that pours in unceasing streams from our laboratories, but I do plead for the recognition of the other sort of research which is purely clinical and macroscopic, and of which the laboratory is but as the handmaiden. The war has furnished admirable examples of what I mean, for I contend that all the best work on wound treatment, on nerve suture, or bone grafting has been purely clinical. There could be no question of limiting the professor in his activities or outlook, but it would be of great advantage to the students if they saw in his work that most useful research can be done from the purely clinical standpoint, for most men go into practice with the idea that research is only for superior persons with well-equipped laboratories, and that their prospects of adding to the sum-total of knowledge is non-existent.

This discussion is entitled "The Education of the Medical Student," but I would like to say a word on Post-Graduate Teaching, because medical men ought always to be students, and because this part of our work has been so largely neglected in Britain. I would make it a rule that practitioners were free to attend any of the demonstrations in the teaching clinic, and I also think that the professor, largely relieved of the calls of practice, should be expected to give one or more demonstrations or lectures each session especially for practitioners. Similarly the other surgeons, relieved of much routine teaching, might devote some of their time to similar work, either in small classes or as set lectures and demonstrations.

In concluding I would submit—(1st) That the teaching of such an important subject as Surgery is enough to occupy the whole of a man's time. (2nd) That Teaching Clinics must be adequately equipped both as regards accommodation, apparatus, and assistants. (3rd) That

those who are prepared to devote the whole of their training and time to the work of teaching must be adequately remunerated.

These are the days of great and unexampled changes, and it may be that if those responsible can only make up their minds exactly what is wanted to put the teaching of surgery on a better footing it may be brought about at one time and in its entirety.

XXVII.—REMARKS ON THE TEACHING OF CLINICAL SURGERY.

By F. M. CAIRD, Regius Professor of Clinical Surgery, University of Edinburgh.

It may be granted that the prime object of a general medical education is to form a trustworthy practitioner who possesses a healthy self-confidence, derived not so much from what he has learned in books but from what he has seen with his own eyes, touched with his own hands, and recognised for himself. Conscious of his own limitations, he remains always a student; thoroughly imbued with the axioms of Hippocrates, he is ever anxious to progress and has the welfare of those under his charge as his first aim in life.

Clinical surgery forms an ideal field for such a training. Habits of observation are speedily attained, and by careful and continuous practice the student almost reflexly learns to note contours, colours, actions, and peculiarities at a glance from the first moment he sees a patient. The hands readily acquire the necessary dexterity and gentleness of touch in conducting an examination, and every case seen should leave a lifelong impression. Men become more keen and appreciative in proportion to the individual opportunities they receive, and the more they are encouraged to observe for themselves the greater becomes the value of their effort. They learn to apply the knowledge they have gained and build for themselves on the solid foundations of anatomy, physiology, and pathology.

It is of the utmost importance that the student should study the natural history of a disease from its start to finish. He should graduate with a clear conception of what can be accomplished by surgery, how far it can cure and alleviate ailments or fall short of success. It is not enough to recognise disease and follow the treatment, to note the progress or complications which may ensue till the patient leaves hospital—the end result should be seen, and for this purpose cases should be presented months after operations and similar cases years after they have been dismissed.

A young graduate who has handled many cases of carcinoma, say of the mamma or alimentary canal, who has witnessed operative procedures to combat these conditions, who has noted failures and recurrences, but who has also seen a large number of such cases in

excellent health years after operation, who, in like manner, has been impressed by the successful treatment of tuberculosis of bones, joints, and peritoneum, will carry away with him a more vivid and a saner view of his responsibilities to those under his charge than does the superficial observer, who, negleetful of his clinical work, is prone to drift into a pessimistic nihilism or become lost in the latest fads of fashionable nostrums. Considering the limited time apportioned to clinical surgery in the present curriculum every hour is precious, and no day should pass without hospital attendance. It is fortunate that clinical surgery can be well taught to comparatively large classes. The patient occupies the centre of a roomy area, where he has space to move and may be inspected from all sides. Students examine in rotation; by question and answer their impressions are estimated and mutually compared. The surgeon sums up, a provisional diagnosis is made, the requisite line of treatment indicated, and at a future date the case is again presented and considered. Cases which do not lend themselves suitably to such a method of demonstration are inspected by smaller groups of students. Once a week, for two hours on end, such a polyclinic takes place. In this fashion an out-patient clinic is constituted in which interest is maintained. All manipulation takes place under supervision—the gentle touch is acquired, and students are taught to couch their remarks in language which convey little to the patient, and to elicit points of family history and habit which have direct bearing on the case with due regard to the feelings of the individuals concerned. The special end in view is to note what is important, to elucidate facts which bear on the points at issue, to weigh evidence, to deduce, to form a fair diagnosis as well as a prognosis, in a concise and logical manner. Ethical questions crop up and opportunities arise of indicating the special obligations of the practitioner to his patient and to others.

Special clinical lectures are delivered twice a week. Here one case may form a text, or the wards may afford material for a series of cases or subjects occupying thirty minutes or more at each meeting. The remainder of the hour is devoted to approaching operations, in which anatomical and physiological principles of general application are emphasised. At the conclusion of every lecture other patients are seen or a ward visit to note progress of some special case is made, but no day passes without the student employing his hands. Operations occupy three days of the week. It is essential that the student should be familiar with all the more usual operations, and care is taken that he sees all the emergency cases as far as can be arranged. Clinical clerks have the privilege of being in the area of the theatre and benefit by close inspection, while they do not impede the view of others. Prolonged operations are relegated to Saturday. The Sunday quiet affords time for instruction in the sigmoidoscope, cysto-

scope, separator, plaster-of-Paris work, and a general ward review. Various methods of inducing anæsthesia—general, local, and spinal—are constantly employed.

It is important, in the event of a sectio, that the surgeon should be present with his class. Then or previously a *résumé* of the case is given with the anticipated findings. There can be no doubt that the services of an assistant pathologist who has special surgical training or bias is a great asset on such occasions.

The method of instruction, then, is that so long familiar to the Edinburgh school. It is identical with what is pursued in all the great teaching centres of mid-Europe. It enables a larger number of men to see, touch, and hear than is afforded when a crowd of students pass from bed to bed hearing little, seeing less, and rarely using their hands. It is a method which brings the teacher and student into close association. It breaks down shyness; men are not afraid to air their own views or to be in error. They are stimulated to take an active interest in their work and rapidly evince a personal sympathy with the patients under their observation.

Such a scheme of training demands the presence of the surgeon for at least three hours daily in hospital. With advantage he might devote all his time to teaching and research, and in Edinburgh teaching should come first. As a whole-time teacher he would require a suitable salary. He should have the services of an assistant surgeon who might act in his place as occasion demanded, and who should take part in the conduct of the course. A surgical tutor is necessary to supervise the museum, pathological work, X-rays, and case reports. The tutorial instruction of the surgical departments should not overlap, nor should it take the place of honest clinical work on the part of the student. The resident should have in view a career as surgeon or gynecologist and act for twelve months.

The student of to-day is overburdened. It is questionable if the existing conditions whereby every obstacle is presented to delay his hospital attendance till he has passed anatomy and physiology is really beneficial. The postponement of his life-work—his clinical training—gives rise to crude, undigested preparation. It does not yet appear certain that the new curriculum which takes him to the medical house before he enters the surgical hospital is going to prove a success or that it lightens his burden.

Certain it is that even before the present great war the general mass of the students already appeared to be lacking in that appreciative interest and enthusiasm with which they formerly approached ward work. It may, however, be that our medical colleagues find them more responsive and fresher than of yore. At present there is a tendency to shirk the duties of clinical clerk. No longer are the wards visited at night. It is said that such evening visits are unwelcome to resident

and ward sister, who regard the student as an officious intruder. This may well be so, for as long as the authorities choose to tolerate a pernicious system by which a student may change his teacher and his wards every three months, the resident and sisters fight shy of committing responsibilities to a bird of passage of whose capacity they know nothing. Clinical training under such conditions is unworthy of the name and is a disgrace to the school which permits its existence. At least six months' training in one set of wards should be compulsory upon all. Class examinations for honours should be voluntary, and at the professional examination at least one examiner —a well-known teacher, selected from another school—should always officiate.

How to relieve the congested curriculum without undue prolongation, and how to give the student more time for study, remains a question. Some alleviation might be obtained by shortening the summer vacation, and were July and August set apart as holiday months, September would be available for special subjects, anatomy, and clinical work.

XXVIII.—SYSTEMATIC SURGERY, *I.E.* THAT OUTSIDE THE HOSPITAL AND AWAY FROM PATIENTS.

By Professor ALEXIS THOMSON.

I am not satisfied with the present system of teaching surgery, and have often expressed my doubts regarding its efficiency both to my assistants and to my students, without having been able to obtain from either of these sources anything definite in the shape of reform. I should feel on much more solid ground were I asked to advise as to the training and education of the surgeon.

To judge from my own experience as a student, teachers of surgery are the last persons who should be consulted as to the method of teaching the subject: my own teacher, John Duncan, whom many of us regarded as the best surgeon in his day and generation, devoted an entire week of lectures to the subject of aneurysm, of which the practitioner might never meet with a case in a long and busy life. Duncan was not peculiar in this respect: some of his surgical contemporaries showed an even greater want of a sense of proportion, as witness the interesting personality, the late Professor Bennett of Dublin, who lectured for a few weeks on inflammation, tumours, and similar surgical chestnuts, and then devoted almost the entire session to fractures, which not even their frequency among the combative inhabitants of Dublin could in any way excuse!

The Period in the Curriculum at which Surgery should be Taken.—There are two attitudes on this question, varying widely from one another; there is (1) the traditional or classical view that surgery, being one of

the fundamental subjects in the curriculum, should be taken as early as possible, so that the student, having the "Principles of Surgery" instilled into him, may be enabled to obtain a better grasp of the subjects that are to follow; and there is (2) the opposing view which claims no such fundamental importance for surgery; which does not think a course of instruction in surgery helps the student to obtain a better grasp of other subjects, such as pathology, midwifery, or medicine; which does not understand what is meant by the "Principles of Surgery," but which, regarding surgery as a special branch of diagnosis and therapeutics, would have it taken after the other subjects in the curriculum, in this respect resembling children's diseases, gynecology, and other specialties.

My predecessor, whose views have always claimed my attention and nearly always earned my respect, did not at all approve when he was told that medicine and surgery had changed places; he did not think the student could have surgery too early in the curriculum, nor could he ever turn out well without being thoroughly grounded in the "Principles of Surgery." While I am with those who advocate that surgery should be taken late, *i.e.* in the fourth year, I would strongly support *any method that would give an insight into clinical work at an early stage* so as to prove or demonstrate the *necessity of knowing* the fundamental subjects on which surgery is based. For example, a method that prevails in certain American schools: in the first six months of anatomy the students are taken over to an operation for strangulated femoral hernia; it is there pointed out how essential it is that the operator knows the anatomy of the region, and they go back to their anatomy with fresh interest, encouraged to master its details. Similarly, the class of physiology is taken to the hospital and shown a case of locomotor ataxia, and how the conducting paths of the cord are interfered with by this disease, and how important it is, therefore, to know the functions of the nervous system and of the other organs in the body; the students will return to their physiology similarly stimulated and encouraged.

This idea is a good one and might be extended. We do not wish the anatomist to teach operative surgery, nor the physiologist clinical medicine, but both these teachers should never lose sight of the practical bearings of their respective subjects and that their students are to be medical practitioners.

We now pass from the *time* at which surgery should be taken to the *amount of surgery and surgical anatomy* the student should be expected to master. To take a concrete instance—Is the general practitioner to open an axillary abscess? The answer will be surely, "Yes." Then he ought to remember where the axillary vessels are! Can he be trusted to remember this from his anatomy course? No; he must have a revisal in his fourth and in his fifth years. What about the

operative class? My view is that it is too expensive a revisal both as to time and energy of the student and of the surgical teacher and his assistants, who might be better employed. The operative class takes more out of the teacher of surgery than any other line of work that falls to his lot. I may add that some schools dispense with it, and I cannot discover that the students suffer from its absence. Probably a short course of surgical anatomy such as that given by our own lecturer on the subject might replace the operative class, but I would advise there should be one both in the fourth and in the fifth year, and a question on it should be set in the final written examination.

Surgery.—Are we to legislate here for the many who practise in, or in the vicinity of, large towns where there are surgeons, or for the minority who are to practise in the Highlands and Islands and the Colonies, where, on the occurrence of an emergency, the onus lies on them to see the patient through? In a cosmopolitan school like Edinburgh, our graduates settling in all parts of the Empire, the surgical standard should at least include the *operative treatment of emergencies, e.g.* strangulated hernia, acute appendicitis, perforation of stomach or duodenal ulcer, tracheotomy for threatened suffocation, retention of urine, amputations. Apart from such emergencies in districts where no other help is available, it may be said that surgery has now arrived at a position beyond the reach and power of the family doctor; he should not, in the interest of the patient and himself, perform surgical operations.

In addition to emergencies, the general practitioner should be thoroughly informed on the following: treatment of fractures and dislocations, arrest of hæmorrhage, diagnosis of cancer, malignant disease, hæmorrhoids. He should have a smattering of other subjects, such as intracranial surgery, operations on the stomach, etc.—merely a smattering to enable him to discuss the subject. Far more important than the accumulation of facts concerning injuries and diseases is the *training of the student's powers of observation;* there is nothing better, for example, in the out-patient room than to give each student a patient and require him to give a diagnosis, which he must substantiate by stating the history and symptoms, and showing the signs to the teacher and the whole class. The difficulty of carrying out this method in the Edinburgh school lies in the number of students.

In any case the teacher can only show the way: the student must travel along it himself. It is an advantage that the way should not be too easy; overcoming difficulties impresses the mind and memory.

My object, since my appointment to the chair, has been, apart from the differentiation of subjects into those essential for the practitioner and those of which only a smattering should be expected, to increase the material of the department, with the object of appealing

to the eye, as much as, or even more than, to the ear. I was the first to introduce the *epidiascope* into general use, and to institute the *cinematograph*, unrivalled for showing the reduction of dislocations, setting of fractures, and a good many other procedures that might not occur during the period the student was attending at the Infirmary, such as *Cæsarean section*, of which all the dramatic features are reproduced, and the film can be repeated until the important points have been mastered. The war has interrupted this development—it was my hope to exchange films with teachers in other centres—Grey Turner in Newcastle and others—and so acquire in time a tolerably complete set, but my cinema is now on board H.M.S. *Lion*, and my friend, Grey Turner, was until recently in Mesopotamia. I have gone in very largely for photographs, lantern slides, and other forms of pictorial display. I hold that when lecturing, say on *rodent cancer*, if I can show slides of twenty-five or thirty cases—the accumulation of years—it ought to impress the student with the chief features of that disease.

XXIX.—ON THE TEACHING OF SURGERY.

By ALEXANDER MILES, Surgeon, Royal Infirmary.

THE question has frequently been asked in the course of this inquiry—"What is our object as teachers in a great medical school?" The answer has come that our aim is twofold—(1) to turn out efficient medical practitioners, and (2) to initiate the training of those who propose to specialise in practice or to pursue scientific research.

I accept this answer as the basis of what I have to say to-night.

Now, hitherto we have attempted with the same machine to turn out these two different products at one and the same time, and neither of them has been altogether satisfactory. The fact is, a machine can only turn out one complete product at a time; to employ it for a second purpose it must be capable of adjustment.

Further, our completed product must by law be stamped with a degree and we have only one stamp available for the two products—the degree of M.B., Ch.B. (I leave out of account at present the Doctorate of Medicine, because while the university examines for this degree it makes no special provision for training candidates for it).

If we are to continue to train our students towards these two different ends, we must adapt our teaching machinery for the double purpose, and we must make some distinction in marking the results. There are different ways in which this might be done: for purposes of discussion I select one and put it forward as a concrete proposal, viz. that the university should confer two bachelors degrees in medicine—(1) a simple pass degree (M.B., Ch.B.) and (2) a higher degree for which the candidate, who must hold the pass degree, would

select a subject or group of subjects recognised by the university for special study, and obtain the degree M.B., Ch.B. *with honours* in the subject selected.

I. Teaching for the Pass Degree.

As regards the adjustment of our machinery, I shall first refer to the teaching of the candidates for the pass degree, as this would necessarily apply in the first instance to all students.

And here, to save time, let me state, without arguing, some general propositions for the consideration of the Club.

1. *That all students should begin their studies in the winter session.* This would obviate that confusion in the curriculum which results from some commencing in winter and others in summer, and would facilitate any wider co-ordination of teaching or rearrangement of the curriculum that may be contemplated.

2. *That every student should enter the hospital in his first term.* This would at once enlist his interest in the clinical aspects of his study.

The surgical out-patient department would be the best introduction, and a few elementary cliniques should be arranged, specially designed to meet the requirements of freshmen. It would obviously not be the business of the teacher at these cliniques to attempt to teach surgery, but rather to draw attention to salient facts which indicate the presence of disease and to cultivate in the student the faculty of observation. He would also find, or make, opportunities of pointing out how the introductory scientific subjects bear upon clinical work—anatomy in relation to diagnosis; pathology in explaining symptoms and signs; chemistry in relation to antiseptic agencies, and so on. Attendance should only be required at most twice a week, and as Saturday could be one of the days, this would interfere very little with the student's other studies. In his first term he would thus have twenty opportunities of visiting the hospital, and, if he saw on an average three new subjects illustrated at each visit, he would have sixty object-lessons on the bearing of his preliminary studies on clinical problems of diagnosis and treatment. This, I submit, would do more to enlighten him as to the importance of the non-clinical subjects in his curriculum than the *ex-cathedra* lectures that have been suggested for this purpose. To the junior student I can well believe that these would be the most interesting hours in the week and he would not often miss them.

3. *That during no term throughout his course should he be entirely excluded from the hospital.* In succeeding terms, demonstrations conducted on similar lines might be arranged in the medical out-patient department, in the out-patient departments at the Sick Children's Hospital, in the X-ray department and later in the Lock department.

There may be difficulties in providing such a clinique in each of the

terms before the student actually reaches his clinical classes, but with a readjusted and co-ordinated curriculum, such as we hope to evolve, some such arrangement should be possible.

It cannot be right that a man who is learning to be a doctor should be debarred by regulation from coming into contact with sick people during two-fifths of the period of his training.

Teaching of Surgery.—Now, I come to refer more particularly to the teaching of surgery.

I take it, the aim of the surgical teacher should be to equip the student with a sufficient knowledge of surgery to enable him when he enters practice (1) to diagnose any ordinary surgical condition he is likely to meet with, and more particularly all acute affections calling for prompt treatment; (2) to treat such conditions as do not call for specialised operative treatment; and (3) to recognise what is necessary for cases that are beyond his own powers and to know what can be done for them. We cannot hope to make him familiar with all the possibilities in surgery, or to render him capable of undertaking difficult operative work.

This means that we must define the scope of our teaching, and this necessitates the formation of a *Surgical Board of Studies* to draw up a *syllabus* which would be approved by the Faculty. For the proper co-ordination of the teaching a *Surgical Board of Studies* should include, in addition to the teachers of surgery, an anatomist, a pathologist, and a physiologist, and I would suggest that when formed it should co-opt two carefully selected general practitioners—one in a good class city practice, and one from a mining or industrial centre—who could from experience indicate the surgical requirements of a young graduate.

While the syllabus drawn up by the Board of Studies would delineate the scope of the surgical teaching—systematic and clinical—it must do no more, and individual teachers must be left free to illustrate their class lectures or ward instruction from subjects outwith it at their discretion. The class and professional examinations, however, should be confined to subjects embraced in the syllabus. It is obvious that a similar Board of Studies would be necessary for each division of the curriculum.

Systematic Surgery.—If I refer to the systematic teaching of surgery, in which I am no longer engaged, it is because I feel strongly the desirability of a closer co-operation between the systematic and the clinical teachers. From my experience as an extra-mural lecturer on the subject, extending over a good many years, and after a brief return to the subject recently, I am convinced that the traditional course of 100 lectures could with benefit be materially curtailed. There is no lack of reliable surgical text-books, and if the subject is limited by the syllabus I suggest, I believe that fifty lectures will suffice.

It might be possible for the clinical teachers to deal with certain groups of common conditions, *e.g.* diseases of joints, surgical affections of the stomach, urinary diseases, etc., in a definite order in the term, after which the professor of surgery would deal with each subject in a few lectures, systematising the knowledge which the student has gained clinically. If these could synchronise with the teaching of the same subjects in medicine and pathology the student would obtain a more connected view of each than obtains under the existing plan. The fifty hours saved would be more profitably spent on practical work, and the professor, or extra-mural lecturer, would be free to devote more time to the individual teaching of the students in practical classes than is possible at present.

It would be a further advantage if the course were divided into a junior course on general surgery and a senior course (given later in the curriculum) on regional surgery.

With regard to the class of *Surgical Pathology*, which is an integral part of the surgical department, I would suggest that the lecturer on this subject should be *ex officio* a member of the pathological staff of the Infirmary. He might conduct the surgical post-mortems, and (under the head of the department) give demonstrations on the specimens thus obtained, as well as on specimens obtained at operations throughout the hospital. He might also supervise the clinical clerks in preparing specimens, sections, and cultures, and in drawing up their reports on these for the surgeon's records.

Co-ordination would thus be effected between the Professors of Surgery, Pathology, and Bacteriology, the Lecturer on Surgical Pathology, and the Lecturers on Clinical Surgery. The Conservator of the Museum of the Royal College of Surgeons might, by arrangement, be included in the general scheme, and the fine collection under his care be more widely utilised for teaching and for private study.

Operative Surgery.—With regard to this class I confess that I have never been convinced of the educative value to the undergraduate of operations performed on a mummified cadaver. As it has hitherto been conducted, it is a waste of material and of time, and gives a false impression of values. Its main use is as a means of teaching surgical anatomy, but this, I feel sure, would be better effected by the students making a deliberate dissection of the part through an operation incision than by pretending to perform the operation. Prepared dissections, transverse sections of limbs, etc., demonstrated to small sections of the class seated round a table would be of great value. Did time permit, I could suggest various means by which the student could obtain in this class a considerable amount of manipulative practice which would be useful. In this class there is a fruitful field for the co-operation of the Professor of Anatomy and of Surgery and of the Lecturer on Surgical Applied Anatomy.

Applied Anatomy.—It is in connection with the class of operative surgery that the co-operation of the Lecturer on Applied Anatomy would be most useful. At present in our school the student is recommended to attend the class of applied anatomy in the first winter term of the fifth year; that is, he is to study applied anatomy *after* the subjects to which it is applied. Would it not be possible to correlate this very important class with (1) clinical medicine; (2) clinical surgery and particularly the operative class; and (3) the special subjects—and so keep up the continuity of anatomical study throughout the whole course?

Clinical Surgery.—If a general scheme of teaching surgery were represented diagrammatically as a wheel, clinical surgery would form the hub, and all the ancillary subjects—anatomy, physiology, pathology, and the rest—would be the spokes converging on it. On the hub lies the patient: let us see to it that the student is always beside him, so that he may come to regard every other subject from the point of view of how it affects the patient. That is why I want the student to enter the hospital at the very commencement of his course and to be continuously in touch with it. Clinical knowledge is absorbed rather than instilled, and to acquire it needs time and abundant opportunity. The teaching is necessarily desultory and cannot be condensed or definitely systematised, and one of the main functions of the clinical teacher is to afford the student favourable opportunities and conditions for teaching himself.

How this is done in each clinique must be left to the discretion of the individual teacher. His method is the natural expression of his individuality as a teacher.

There are, however, certain conditions that must be attained if the teaching of clinical surgery is to be efficient—

1. The hospital hours must not be encroached upon by the teachers of non-clinical subjects.

2. The teaching of clinical surgery must no longer be made secondary and subsidiary to the teaching of the *special* clinical subjects. Nothing has done more to interfere with our teaching than the arrangement by which the students attend special classes on the same days as they attend clinical surgery, and during the first hospital hour.

3. The students' attendance at hospital must be rigorously enforced, a roll being taken daily and a high percentage of attendances made necessary for a certificate. It must not be accepted as a valid excuse for absence that the student was preparing for a class examination in some other subject.

4. Greater use should be made of the out-patient departments for the teaching both of junior and senior students. The officer in charge must be given a better status and more assistance in teaching. The practice of the full surgeons giving out-patient cliniques for senior

students might be reverted to with advantage. For the future practitioner the examination of fresh cases as they arrive at hospital is of great educative value, and his wider experience renders the senior surgeon the most appropriate teacher.

5. The statutory clinical lectures, given twice a week, should be abolished, and the teacher in each clinique be left free to utilise the time at his disposal to the best advantage of his class. He may deliver at his discretion a set lecture on occasion, if he has material suitable for this form of exposition.

6. The assistant surgeon attached to each charge should take a large share in clinical teaching: the teaching of junior and senior students separately will necessitate this.

7. Tutorial instruction in practical details, particularly of minor surgery, such as a practitioner will undertake in his practice, should receive more attention. The staff of the out-patient department might co-operate with the systematic and the clinical tutors in arranging this work. A special syllabus should be drawn up for the guidance of the tutors.

8. I confess to a certain amount of doubt as to whether the student does not spend a disproportionate amount of time in merely witnessing operations. Certain operations he should see many times, others at least once; but there are a good many frequently performed from which he learns nothing. It is true that he often takes the matter into his own hands and absents himself, but his time is thus wasted, unless provision is made for him doing other work in the hospital.

9. Lastly, each of the teachers—out-patient officer, tutor, assistant surgeon, and surgeon—should keep a record of the individual student's work, and assess it in marks, which would be recorded and taken into account at his professional examination. If the student knew that the records of his class-work would be carried forward to his professional examination, it would ensure his concentrating his attention on the subjects throughout and do away with the cramming before examinations which is so prevalent. Such a method would, in addition, furnish a better criterion of a man's fitness for practice than the present final examination does. The principle has already been accepted with regard to the special subjects.

The whole question of examinations, however, will require to be taken up by the Club at a later stage of our inquiry, as the recasting of the curriculum on the lines that have throughout been suggested will involve a revolution in our methods of testing the student's knowledge.

A Co-ordinating Scheme.—In the discussions that have preceded, the desire has been generally expressed that the teaching of the preliminary scientific subjects should be continued further into the curriculum so as to bring them into closer relationship with the clinical

subjects. This seems to carry with it the possibility of commencing clinical study a little earlier, and so distributing hospital work over a longer period.

It has also been suggested that the systematic courses in certain of the later subjects might be broken up into junior and senior courses.

To focus these ideas in concrete form, it might be suggested that clinical study proper begin in the summer term of the second year, which could be devoted to the Course of Instruction in Clinical Methods—physical signs, urine testing, etc.—developed at last meeting by Professor Russell. Coincidently, the anatomy of the thoracic, abdominal, and urinary organs would be dealt with by the Professor of Anatomy; the physiology of these organs by the Professor of Physiology; and their morbid anatomy by the Professor of Pathology.

The junior student would thus obtain a sound foundation for the junior course in medicine, which could be given in the first term of the winter session of the third year, during which term he would also be at work in the medical wards, the cliniques there being systematised in the manner suggested by Dr. Matthew.

In the second term of the third year the junior course of surgery (on general surgery) could be given, coincidently with instruction on such portions of anatomy and physiology as might be arranged, and with demonstrations on general surgical pathology. This would prepare the student for entering the surgical hospital in the summer term of the third year.

The senior courses on medicine and on regional surgery could be given later on, preferably towards the end of the student's clinical work, so that the professors could systematise and bring into perspective what has been learned in the hospital—the senior surgical course, say in the first term, and the senior medicine course in the second term of the fifth year. (This inversion of the order is necessary to keep junior and senior courses in different terms.)

The remaining terms of clinical medicine and clinical surgery could easily be adjusted, as well as the periods of attendance at gynecology, fevers, mental diseases, dispensary, etc. It would be an advantage if the surgery of children could be studied at or about the same time as the surgery of adults, and so with medicine. There remain the other special subjects, with which I shall not deal further than to say that they must be arranged so that they do not clash with the general clinical work.

II. Teaching for the Honours Degree.

Although this subject does not pertain strictly to the present discussion, I must refer to it briefly, as it bears upon my argument.

The subjects in which a candidate might take the Honours degree

would require to be very carefully selected by the Medical Faculty. Those subjects in which the university grants the degree of Bachelor of Science, *e.g.* in pure science (which includes chemistry, zoology, and botany) and in public health, would probably be excluded. It is doubtful if the diploma in tropical medicine and hygiene and the diploma in psychiatry stand on the same footing.

It would probably not be necessary to draw up any syllabus for this degree as the candidate would be expected to be familiar with his subject in its widest aspects. As all the candidates for Honours degrees would already be graduates, the Honours course would naturally form the standing machinery of a *post-graduate school*. It would be a simple matter to arrange for graduates from other schools, and practitioners who desire further study, to take part in it without, of course, becoming candidates for the Honours degree. In the Post-Graduate Course, so successfully carried on for some years before the war, we have a basis on which such an Honours school might be built up. It would be a great advantage to have post-graduate teaching going on in term as well as (or instead of) during vacation only. Under such a scheme it seems possible to add materially to the teaching power of the university.

It is generally conceded that the best way to learn more of a subject of which one knows a little is to try to teach it to someone who knows less. Could not the members of the Honours school be employed as *junior demonstrators* to students in the practical classes of such subjects as anatomy, pathology, physiology, surgery, etc., or as clinical assistants or tutors in such classes as clinical medicine, clinical surgery, as well as in the eye, ear, and skin departments, and at the Sick Children's Hospital? If such arrangements were possible they would carry with them various advantages, *e.g.*—

(1) Practical instruction could be given to small sections of a class, and the students would therefore receive more individual attention. (2) The Honours students would be afforded a practical means of improving their knowledge and find a healthy stimulus to work. (3) The teaching faculty would be developed in those who aspire to a teaching career (or its absence might be revealed). (4) The professors and senior teachers would have a means of estimating a man's capacity in this direction before selecting him as an assistant or tutor. (5) There would be a wider choice of assistants, etc., than at present, and they would be more highly trained. (6) Members of the Honours school would be able during the vacations to devote some time to research work of an elementary or preparatory kind. (7) And lastly, as these junior teachers would (presumably) be unpaid, the university teaching staff would be augmented without drawing on the university chest.

Against this last advantage must be put the cost of such increase

in the senior teaching staff as would be necessary for instruction of the Honours candidates, but as these candidates would pay fees for their classes this would probably not be great.

Lectureships already exist in the university in such advanced subjects as experimental pharmacology, neurology, physical methods in the treatment of diseases, medical entomology, as well as in other specialised subjects, such as mental diseases, dermatology, ophthalmology, laryngology and many others. I should suppose that the lecturers in these various departments would welcome a body of students specially interested in their subjects and intending to devote themselves to them. Under a two-standard system of teaching these classes would be largely composed of Honours men and other post-graduate students, and the standard of the teaching would be adjusted to their needs. It cannot be doubted that the teacher would be stimulated by such an audience.

It is probable that the house physicians and house surgeons in the Infirmary, the Sick Children's Hospital, and other hospitals, the clinical assistants in the special departments, and the *paid* demonstrators in anatomy, pathology, etc., would be selected from among those who have taken the Honours degrees in the respective subjects, or from candidates for Honours. This would ensure a high standard of efficiency in these officers and great keenness for their work.

I may add that in so far as these tentative proposals are constructive I have attempted to work them out in some detail. But the time has not yet come for the Club to enter upon the discussion of details, and I leave them now as general propositions.

I should like to have the opinion of the Club on—(1) The general idea of a two-standard system of teaching, with its corollary of a post-graduate school. (2) The limitation of the scope of surgical teaching for ordinary graduates (whether an Honours degree is accepted or not) by means of a syllabus. (3) The means of co-ordinating the earlier scientific subjects with surgery. (4) The *rôle* of lecturing in the scheme of teaching surgery. (5) The possibility of devising a means by which the student's class record could be made an integral factor in deciding his professional examination. (6) A practical means of co-ordinating the teaching of the scientific with the other clinical subjects.

DISCUSSION.

Mr. J. M. Cotterill.—If a sixth year is necessary for the Honours man that will be a difficulty. Otherwise many of us might consider Mr. Miles' Honours course an excellent thing. It is true that a small percentage of the students are subsequently called upon to do the more difficult and intricate operations, yet they are all supposed to be taught them. There might be some economy of effort in that direction. Might not the teacher of systematic surgery omit a good many of these more difficult operations, leaving them to

the teacher of applied anatomy and the lecturer on operative surgery? It was my experience that the men's knowledge of the details of surgical ward work deteriorated very much during the last four or five years that I was connected with teaching in the Infirmary. There is no doubt that one reason for this was the encroachment on our time by other teachers. The acquisition of surgical capacity is very much a question of time and opportunity, and unless the students can spend plenty of time in the Infirmary, and are encouraged to come about it not only in the daytime but also at night, I am convinced that they will not know their work as they did in the years when it was the common practice to attend the Infirmary in the evenings. Nowadays they have neither time nor energy for the absorption of clinical knowledge in the hospital.

Professor Harvey Littlejohn.—Many of the suggestions made to-night are not only worthy of consideration but ought eventually to be adopted. Perhaps the Edinburgh school has been too conservative, and too prone to divide its curriculum into watertight compartments instead of allowing a certain amount of elasticity as regards spreading the tuition of various subjects throughout the course. In view of the advances that have taken place in medicine, it might be advantageous to split up important subjects, such as medicine and surgery, into two courses, one to be taken in the earlier part of the curriculum and the senior course at a later period.

I would remind Mr. Miles that a great many of the views he has expressed were put by the Faculty before the Clinical Surgery Board some years ago, *e.g.* that there should be the strictest record of attendance of students at the various cliniques, and that no student should get a certificate of attendance without satisfying the teacher as to his work and as to the interest he displayed in the class. By this means we would have a guarantee that when a student comes up for his clinical surgery examination he knows his work. Although the present arrangement is not ideal, I must say in vindication of the Faculty that we did submit the question to the teachers of surgery some years ago whether, under the circumstances and considering the subjects we had to put into the curriculum, they would agree to the special subjects of eye, skin, ear, nose and throat, and children's diseases being taken from 11 to 12 A.M. The surgeons agreed to that arrangement on the understanding that clinical surgery would be attended by the students from 12 to 2 P.M.

It would be better for all to begin study at the same time, but those who desire to do so must be allowed to commence in summer if they have qualified by passing the preliminary examination, provided always that they do not graduate at any earlier date than the students who begin in winter.

It is interesting that Mr. Miles should suggest some degree to stimulate the cultivation of post-graduate scientific work or advanced study; the Faculty has had that under consideration, and has agreed that there should be a degree conferred by the university not only upon its own graduates but on any graduate of a recognised university, this degree to be given for advanced study and research.

Mr. Dowden.—The teaching of the medical student should begin in his second three months with clinical surgery. His first three months I would devote to a brief *résumé* of bacteriology, anatomy and physiology. I would have him at the Infirmary, where he would be taught to observe and shown

the effects of treatment. Afterwards he would continue in surgery throughout the whole of his course, including surgical pathology, bacteriology, anatomy, and physiology. He would learn the psychology of his patients by constantly being with them; he would become familiar with the appearance of wounds. I would do away with operative surgery on the cadaver, and also to a large extent with the operations which the student has to witness from a distance. The students should come in small groups to see an operation, and, if possible, they should assist at it. In the teaching of clinical surgery we lecture too much to the students without understanding the level of their knowledge. This, I find, can best be determined by question and answer. I agree that we should teach all emergency work. I would do away to a large extent with systematic lectures, except as an introduction to the subject, relying for that part of the work on small tutorial classes on the question and answer system. The student requires a small text-book containing the main principles. I am not in favour of an additional degree. We cannot expect the student, unless he has means, to stay up for a sixth year.

Mr. Wilkie.—We must follow certain broad lines in order to maintain the reputation of the Edinburgh Medical School. There is a unanimous opinion just now that the next few years will be a time of great opportunity for the school. The question of a whole-time professorship of surgery must be definitely faced in the not too distant future. Various arguments have been put forward against it, but if we are prepared to look sufficiently far afield, we will not have much difficulty in getting the right man.

I would appeal for a uniform system of case-taking in the Infirmary, under the supervision of a surgical registrar; all cases to be collected together in a library and cross-indexed, to be the property of the university, and to be available to all the surgeons. Much time and labour in collecting case records would thus be saved. We should have in the Infirmary three resident clinical observers, who should be men who had been house-surgeons and had had some practice in research. Their presence would be a great stimulus, both to the teachers and to the students.

I would suggest that annual hospital reports, illustrated, should be published, including all the work done by members of the staff during the year. Great importance is now attached in America to graphic records of patients and of pathological material. Indeed, a school of medical art has been started in America, where artists are being trained for this particular work. Students would appreciate very much the inclusion of their work in the wards in this volume of annual reports.

I agree strongly with Mr. Miles in regard to the Honours degree; it is to be deplored that all the graduates from this university rank at the same level. There is a tremendous difference between the really good graduate and the one who simply succeeds eventually in passing the examination. An Honours graduate of Edinburgh University should be considered to hold one of the best degrees obtainable anywhere.

Dr. Edwin Bramwell.—We who are teaching clinically all feel that the student neither spends the time at clinical work nor takes the interest in it that he should. Various remedies have been proposed, but I think the idea that the student's work during his course should be made to count in professional examinations is the most important of all, although it is difficult to

see how this should best be arranged. In connection with medicine, I think the student learns more by case-taking than by any other method, and I would suggest that he should bring to his final examination records of the cases he has taken—approved by his various teachers—and that these records be accorded a proportion of the marks. If this were done, it would be a great inducement to students to spend more time in the hospital than at present.

I am in entire sympathy with Mr. Miles' suggestion of a more elaborate advanced course. My idea in connection with a post-graduate course has always been gradually to extend the comparatively simple teaching we give until it should receive recognition from the university.

Professor Gulland.—First and foremost, I would consider the splitting of the medicine and surgery courses. I am glad Mr. Miles has accepted that for surgery, because the time-table he has drawn up is admirable, and would make for efficiency in our teaching of pathological surgery and medicine. I am pleased that the teachers of surgery insist that they should not attempt to get into the heads of their students all the details, but that they should teach them to deal with emergency cases. My own feeling about surgery is that it should be in the hands of men who have shown that they can operate; a man should not be allowed to do major operations unless he has had special training in surgery.

As to the suggested Honours degree, the Post-Graduate School will be a burning question for us immediately after the war. We must have post-graduate instruction for the men who were hurried off to the Army or Navy as soon as they took their degree.

There is no doubt that Dr. Edwin Bramwell's suggestion of students bringing their marked cases up to the final examination will be adopted in the near future.

Dr. Dingwall Fordyce.—May I ask what principle underlay the institution of two separate chairs of medicine and surgery? If it is the fact that in the near future we must look to the Professor of Medicine as of necessity being a whole-time man, that will be a most important stand for us to take in Edinburgh. A good teacher of medicine is a rare person; but I think if we could attract a first-class man to Edinburgh he would be content to be a full-time man, if suitably remunerated, on condition that he had control of his subject—control of the subject of medicine, including, of course, systematic medicine and clinical medicine.

Mr. Beesly.—I am in agreement as to doing away with the class of operative surgery. I have always found that I could arouse much more interest in teaching surgery with anatomy.

Dr. H. G. Langwill.—Speaking as a practitioner, I would like to allude to the bearing of what one might call the practical part of surgery on practice. One of the most important subjects the general practitioner has to deal with from the surgical aspect is the treatment and management of fractures. The teaching in this respect is not as adequate as it might be. More might be done in the out-patient department and in the wards regarding the recognition of fractures and the management of the practical difficulties in their treatment. This work the practitioner has to face without the advantages of a surgeon in an institution. My experience is that when men come out as

assistants and locums they are far too much in the habit of relying on the advantages they had as students: it is useless for them to rely, for example, on X-rays to diagnose a fracture.

Mr. G. L. Chiene.—We must recognise that we are trying to teach the student far too much, and the Board of Studies should form a syllabus from which he should be taught, and the surgical teaching should be limited in accordance with that syllabus. The man who wishes to become a specialist can afterwards study the more important surgical procedures.

Dr. Sinclair.—In connection with a possible Honours course of medicine, would it not be possible to remit the M.D. and M.S. of this university to an Honours course? If the higher degrees were made of more real and general importance, it might serve the purpose of getting a senior and junior degree into the school which would be of real value.

Mr. Jardine.—At present the teaching of the out-patient department is optional. It should be made the first preliminary of teaching in clinical surgery, and before he gets a certificate as a dresser the student should be required to have attended regularly for three months at the out-patient department.

It is difficult to carry out the teaching of fractures in the out-patient department, as only those of the upper limb can be taught. Lower limb fractures must be taken into the hospital. When the student has finished his dressership in the out-patient department he should be transferred to a ward as a dresser. He should be under a clerk and should be given the charge of a patient, who would nevertheless be directly under the charge of the clerk (a senior student). Each clerk should have under him three or four dressers responsible to him for the treatment of their patients. If such a student has had a good grounding in the out-patient department, he is quite capable of dressing wounds. Without this he loses all the personal interest in the patient that he ought to have. The great thing is that the student should feel personally responsible for the treatment of his patient, otherwise he will shirk his hospital work and read at home. As regards attendance at night, I think it is ridiculous that the students should be compelled to be out of the Infirmary by eleven o'clock unless they have permission from the surgeon in charge to remain later. Many of the emergencies in the out-patient department come in at odd times, and if the student is only there for a short time during the day he misses many opportunities. It should be possible to inform the students of what is going on in hospital. I am sure the men would come if they knew an interesting case was on hand.

Mr. Graham.—The men are not getting sufficient clinical instruction, and this is due to the fact that they are not compelled to attend; there is a certain laxity all round in seeing that they actually come to the clinique. Attendance should be taken at every clinique. In a voluntary class of surgical pathology which I introduced a few years ago I ascertained the name of each student each day, and I have never had more regular attendance in any class. The clinical teaching would be furthered if on one of the surgeon's operating days each week the assistant surgeon gave a clinique while the operations are going on. The value of systematic teaching will always be somewhat doubtful; the one aspect of surgery which we can teach by it is surgical pathology, and

the men have had a very thorough grounding in this in the pathological course. It is most important for the students when they become practitioners to know the morbid conditions they have to diagnose. In clinical teaching possibly the surgeons might show more cases of the clinical material at their disposal. A central museum on the surgical side, formed of the pooled collections of all the surgeons, would add materially to the value of the teaching in the Infirmary.

Dr. J. S. Fraser.—There is a great difference in the strength of the medical and surgical schools in Edinburgh—the surgical is acknowledged to be stronger than the medical. I think this is due to the method in which medicine is approached. The physician begins as a general practitioner; in time he works up to be an assistant physician, and later full physician. But even then he is seldom rid of his general practice. Whereas the surgeon starts with anatomy, becoming later a clinical tutor, with time for research work in pathology, etc. Thus he makes a name for himself. What Mr. Grey Turner has said goes to the root of this matter; we want more whole-time appointments. Why should this only apply to the Professor of Clinical Medicine?

Dr. Chalmers Watson.—I am in general agreement with the remarks of Dr. Fraser as to the defective condition of affairs of the medical side of the school at the present time. I cannot subscribe to Dr. Fraser's view as to the efficiency of the surgical as opposed to the medical side of the school. Quite apart from the question of technical skill there is, in my view, the same urgent need for a wider outlook and a more progressive spirit of inquiry on the part of surgeons in regard to many problems that are of joint interest to physicians and surgeons; this is of importance in relation to greater efficiency in teaching.

Comments on the interesting new experiment of the whole-time Chair of Clinical Therapeutics, are, however, comparatively useless in the absence of any knowledge as to the work of the new department. Unless, however, the arrangements for the teaching in that department are made in conjunction with other physicians, there are, in my view, risks that the advantages of the new department may be less than anticipated.

Mr. Cotterill.—The university changed the hospital hour for clinical surgery from 11 a.m. to 1 p.m. to from 12 to 2 p.m. That has been a failure. As long as the eleven o'clock hour was adhered to, the men attended with enthusiasm and regularity. Their interest is still the same, I believe, but now they simply have not the time. Examinations are so devised that they are forced to go to the obligatory classes.

Out-patient teaching is almost the most difficult of all. One has to make an instantaneous diagnosis and to be possessed of judgment and experience—which means that a very competent and experienced teacher is needed. It was a move in the wrong direction when this work was taken out of the hands of the senior men and put into the hands of the juniors, who have not yet got that experience so essential in diagnosis which the seniors may reasonably be expected to have.

Mr. John Fraser.—I would associate myself heartily with the remarks which Mr. Miles has made. One or two opinions perhaps may be worth mention. They are the result of the limited experience one has had in

clinical teaching and of the experiences which one had in conducting a short systematic course in surgery, and also from talking the matter over with students. One cannot with any advantage entirely abolish systematic surgical lectures. The successful prosecution of surgery as an art and as a practice is governed by most important basal principles. Those who teach surgery are apt to forget that a large majority of their listeners are not going to specialise in surgery but are going to be general practitioners, hence I believe that the basis of surgical teaching ought to be laid by a prepared course of lectures which makes the student conversant with the basal principles. By these principles I mean such things as shock, haemorrhage, antiseptics, the process of wound healing, inflammation, etc. These principles are best taught by a series of well-thought-out lectures aided by a series of illustrative cases. But with that consideration my support of systematic lectures would end, for it seems to me that a complicated series of discourses on regional surgery unillustrated by clinical material is a waste of time.

My second point is, that we cannot overestimate the value of a well-considered and thought-out syllabus in teaching surgery. This should be delivered to the student beforehand, and it gives him at once an outline of the course which he is to pursue. This would have many advantages; it would enable the student to gain, by reading, a certain amount of knowledge of the subject with which the lecturer will eventually deal, and by doing so it is but to be supposed that the student would be in a much better position to appreciate the details which will afterwards be given to him. A second advantage is that it largely abolishes the necessity of note-taking. I am not one of those who believe that any man can do two things at once equally well, and if the student is bent upon taking profuse notes, I question if he can apply sufficient concentration of mind to appreciate the points which the lecturer is attempting to bring out.

The surgeon possesses a most valuable opportunity for teaching his students anatomy from the surgical standpoint, and that opportunity lies in the demonstration of anatomy during surgical operations. The anatomy of the dissecting-room, while the same in theory, is often very different from that which is met with in surgical practice, and it is this difference which is often so confusing and perplexing to a student. If, therefore, the attendance of a small body of students was insisted upon during operations, the student will get just that opportunity which he requires for refreshing his knowledge of anatomical details. Take for example such an operation as the dissection for the removal of glands in the neck. It affords a valuable opportunity for anatomical instruction, and I question very much if the teachers take sufficient advantage of it. This is only one illustration, but the principle applies to every part of the body which is liable to surgical operation.

I doubt whether sufficient is made of the time which is already at our disposal. We have heard the suggestion that the medical students' curriculum ought to be extended to six or even seven years, but I wonder if we realise that out of the twelve months of the year the medical student spends five in vacation. There is probably no other probationary period which would shew parallel to this, and, therefore, I would suggest that during a part of these five months the senior student ought to be given opportunity of enlarging his clinical surgical experience by means of a series of classes held during vacation. I quite realise that this would throw an additional heavy strain

upon the teaching staff, but there are obvious ways in which this may be met. I am one of those who believe that the student can scarcely begin his surgical clinical work too soon.

For a practitioner to be successful in his surgical practice, the most essential element is that he is capable of using his powers of observation, and further that he is able to interpret these observations, and in other words he is able to make a diagnosis. If the young graduate is equipped with these two essentials, I believe he will find that his success in general practice from the surgical point of view is very largely assured. These are two qualifications which can only be gained by prolonged practice, and surely it is but reasonable that he should begin to acquire these qualifications as early as possible.

Mr. Grey Turner said in reply.—Nobody has taken up the scope of my scheme so generally as I meant it to be taken up. My idea is that in medical schools we will have whole-time professors in practically all the important subjects, plus assistants with salaries, but not such salaries as to make them content to stay there for the rest of their lives. Recognition of their work should be the reward for which they strive. This is a very big matter, which must be started in a small way, unless the State takes it wholeheartedly in hand. I think it will come gradually.

I was much impressed by Mr. Cotterill's remarks on out-patient department teaching. He hit the nail on the head when he said that it ought to be given by the men who have the greatest experience. My opinion is that the cases from the out-patient department for teaching purposes should be sent on to the main surgical cliniques. Everybody in the hospital should be expected to teach, but it would be the business of some of the people to devote the whole of their time to teaching, and they must have the proper material for that teaching.

Mr. Miles said in reply to the Dean that the experiment of holding the special classes from 11 A.M. to 12 P.M. had not been a success, so far as clinical surgery is concerned. The students have become less punctual and less regular in their attendance, and they refuse to stay later than 1.30 P.M. The Honours M.B. degree, he suggested, has nothing in common with the post-graduate degree established by the university. He did not propose in any way to interfere with the M.D. degree, which should remain the hall-mark of the Edinburgh graduate.

XXX.—DISEASES OF CHILDREN: WITH SUGGESTION FOR A PRELIMINARY COURSE IN CLINICAL MEDICINE.

By J. S. FOWLER, Physician, Royal Hospital for Sick Children.

Some twenty odd years ago the staff of the Children's Hospital were called upon to organise the clinical instruction there, and to decide which diseases should be dealt with and how they could best be taught. They had few traditions, good or bad, to trammel them, and the university gave them an almost entirely free hand both as to matter and method—with the one exception that any systematic course of lectures was forbidden. After much consideration a syllabus was

drawn up and classes were started which have gone on twice or thrice a year ever since. As experience was gained the details of these courses have been greatly modified and extended.

We have therefore had a very instructive experience. We started, mainly on our own lines, a new course of teaching in a department of clinical medicine; we have carried it on for many years and have altered it in various directions in accordance with our experience of the success and failure of different methods. Since the subject of the diseases of children is essentially clinical medicine, it is hoped that some of our views regarding the teaching of medicine in general may be thought worthy of the notice of the Club. And it may be added that the position of the class at the end of the curriculum has enabled us to form some opinion as to the knowledge of the elements of clinical medicine which the students possess before they come to us.

1. One of the first points to be emphasised is *the limited value of systematic lectures* on medicine to students who have had no clinical experience of the subject lectured on. In the Children's Hospital, although till lately no systematic course of lectures was allowed, a certain number of class-room meetings were necessarily held on infant feeding, and various other subjects. There has, however, been a tendency to lessen their number, and we are now convinced that there are very few diseases which are not more profitably taught in cliniques to begin with, though occasional reviews of groups of cases or of special symptoms in the lecture-room are useful at a later stage. Such diseases as pneumonia, rheumatism, poliomyelitis, etc., seem to us quite unsuited for teaching in lectures and far better studied in the wards. A few years ago the university, on the suggestion of the lecturers, authorised a course of ten introductory class-room lectures at the beginning of the summer and winter sessions. Experience has shown that this was a mistake. Even ten lectures given daily are more than the ordinary student can absorb with benefit unless his intellectual appetite is whetted by some intervening clinical study of the same subjects. We have found that the students learn much more from weekly than from daily lectures, and in consequence it is proposed to return to the older system, and to deliver lectures on such subjects as tuberculosis, infant feeding, mental defect, etc., after, not before, the student has studied the subjects clinically.

2. *Preliminary Course in Clinical Medicine.*—Two lessons which we have learned in conducting our own course lead me to suggest that the earlier training of the student in clinical medicine needs revisal. The first and most important of these is the necessity we have been under of teaching a good deal of the applied elementary physiology of children by way of introduction.

Generally, when the medical student begins to attend the Children's Hospital he is absolutely ignorant of the peculiarities of the structure

and function of children—even of the commonest facts of the nursery which every mother knows. We have, therefore, necessarily to devote a good deal of the time at our disposal to the teaching of such matters as the rate of body growth in length and weight, the characters and closure of the fontanelle, the development of the digestion and the sort of things a child of a given age is likely to be able to eat with benefit, the development of speech, and of walking and other voluntary muscular movements, and many similar subjects, including the personal hygiene of the nursery. It is only when the student has learned something about health that we can hope to teach him effectively about sickness. This suggests that more time and attention might with advantage be spent on teaching to junior students the anatomy and especially the physiology of the normal body from a clinical point of view.

On entering the clinical wards of the Infirmary the student has not got to learn so much clinical physiology as he has in beginning the subject of diseases of children, but still there is a good deal that he ought to know about the working of the normal body which he has not learned in the excellent classes of anatomy and physiology. Hitherto he has had to acquire this sort of knowledge from tutorial classes and incidentally in cliniques and clinical lectures. We think it would be greatly to his advantage if it could be taught to him more definitely and fully at the commencement of his Infirmary course.

The second lesson we have learned is that a very noticeable proportion of the students come to us with an insufficient knowledge of ordinary physical signs.

From what has been said in previous discussions here, there is a very general desire that the student should begin his clinical work sooner than at present, that he should early become familiarised with the aspect of sick people, and that his physiological, anatomical, and pathological teaching should be better correlated with his clinical work. It may be suggested therefore that a suitable preliminary course might with great advantage be given to all students before they take either ordinary clinical medicine or any of its branches. The supervision and some of the teaching of this class might be delegated by a general clinical medical board consisting of all the teachers to two or three of the assistant physicians, for it ought not to be the duty of a senior lecturer to teach the elements of clinical medicine. There would also be available as teachers clinical tutors attached to the wards, and from the pathological, anatomical, and physiological departments, all suitably remunerated, and possibly senior student demonstrators. The class would last for two or three terms and would cover—(1) Clinical physiology; (2) physical examination in relation to medical anatomy, and especially in relation to morbid anatomy; (3) clinical pathology and instrumental methods, etc.

1. *Clinical physiology* should include some such subjects as the

following :—(*a*) Alimentary System.—The healthy mouth and Nature's way of preventing oral sepsis ; the process of healthy digestion ; the movements of the stomach and bowels and the rate of passage of the food through the alimentary canal—X-rays ; the fæces—their physiological variations ; defæcation. Physiological digestive symptoms.—Flatulence, colic, vomiting, diarrhœa, constipation, and the results of repletion and starvation ; the effects of special diets. (*b*) Skin.—Perspiration, blushing, goose-skin, urticaria, intertrigo. (*c*) Temperature.—Changes from diet, drugs, starvation, excitement. (*d*) Urinary System.—Physiological changes in the urine, physiological albuminuria and glycosuria ; tolerance for sugar and albumin ; effect of diet and exercise ; micturition—effects of foods, exercise, emotion. (*e*) Heart.—Physiological bradycardia, tachycardia, and irregularities ; physiological dilatation, murmurs, and venous pulsation ; effect of respiration on the pulse ; the heart in debility ; cardiac instruments. (*f*) Distribution of pain in visceral disease. (*g*) The effect on the functions of the body, and on symptoms generally, of exhaustion and debility, of pregnancy and the menopause, of old age. (*h*) Physiological Therapeutics.—A selection of the following subjects might be considered : Keeping well. Personal hygiene—skin, hair, etc. Clothing—too much and too little. Washing and bathing—hot baths, cold baths, etc. Fresh air and sunshine—effects. Diet—for obesity, malnutrition, constipation, etc. Alcohol—effects in moderation. Tobacco, tea, coffee. Alkalies—effect on the body generally, on the urine. Laxatives. Enemata—purgative and nutrient. Saline infusions.

2. *Physical Examination.*—Physical signs are neither easy to learn nor easy to teach. What is important is that when a man graduates he should be able to detect well-marked signs, and to feel confidence in his findings. For instance, when a student is really sure of bronchial breathing, he has gone more than half way towards mastering auscultation of the lungs. The teaching of physical signs should therefore begin with and give most prominence to the really important—what may be called pathognomonic—signs, rather than work through a systematic schedule such as is given in books, in which a good deal of space is naturally taken up with relatively trifling variations from the normal. For actual practice in learning physical signs students should not work in groups of more than five to ten. To make the best of the material available the whole resources of the medical side would have to be pooled (possibly other institutions such as poorhouse hospitals might also be utilised), and therefore the students in this introductory class would not attach themselves to any one physician—the class would be quite independent of the later ward teaching by the various lecturers. Applied anatomy should be taught by the anatomical tutors in connection with the class, and, what is even more essential, physical examination should be brought into very close relation with pathology

—naked-eye pathology in the first place, laying great stress on the way in which morbid processes produce abnormal signs—the physics of the process. A collection of teaching specimens made from this point of view would be of great value, and it should be the duty of the tutor, when a patient dies, to demonstrate on the organs the changes which have caused the signs that the student has heard.

The idea underlying this course so far has been to give the student ward instruction in really important and practically useful matters which yet require no previous knowledge of medicine beyond what has been obtained in the departments of anatomy and physiology, and, second, to give him a good knowledge of the tools he will have to use later, without which no progress is possible.

3. *Clinical Pathology.*—Differences of opinion will exist as to how far these ordinary tools should be supplemented by more elaborate methods. My own opinion is that an average student should be expected to know practically only such methods as a busy practitioner will have time to use in his future work, but that he ought to know about as many others as possible. He should therefore be taught, and know how, to collect material properly—in what sort of case, and at what stage of the case—how to do lumbar puncture, puncture of the chest, how to get blood for blood-culture, to get sterile specimens of urine, how to make and stain blood-smears, how to use the ophthalmoscope sufficiently to recognise choked discs, how to stain for tubercle bacilli—in short, any test that is trustworthy and that does not involve the expenditure of time. With respect to more lengthy instrumental or laboratory methods, it may be suggested that these should only be demonstrated to the ordinary student, or at least that time should not be expended on them to the detriment of other work. What the ordinary student ought to know is, how to make proper use of the clinical laboratory.

On the other hand it might be feasible to increase the opportunities of the senior student who is above the average in two ways: (1) By allowing such men as for instance are likely to become house physicians after graduation to act as clerks in the clinical laboratory. (2) By utilising their services as student demonstrators in the preparatory course.

In addition to the three main branches of the course, I should like to propose a fourth form of instruction, given by the senior physicians. Once a week, each student should attend a short ward visit, at which the obvious features of typical cases of disease—Bright's disease, pneumonia, hemiplegia, heart disease, for example—should be pointed out. Not more than two or three minutes need be given to a case, and as a rule the examination would be limited to inspection. It is very important to begin early to familiarise the student with the look of sick people and the more striking forms of disease. Besides this

the senior lecturer might sometimes lecture on special symptoms to the class—cough, headache, convulsions, insomnia, and the like.

At the end of the course the students would be required to pass a strict practical examination on the subjects taught before proceeding to clinical medicine proper. After working through such a course they would be enormously more interested in, and more receptive of, instruction in clinical medicine, and incidentally in that part of it which plays the title-rôle of this paper.

With regard to diseases of children, the time allotted (two hours a day on three days a week for medicine during one term) is sufficient. The chief drawback under which we labour is that which was emphasised by Dr. Norman Walker at a previous meeting—that it is all compressed into one term. It would be better were it spread over a longer period and taught concurrently with general medicine, provided that the preliminary training in physical diagnosis, etc., is adequate. At one time we thought that it ought to be taught after and as an extension of the rest of medicine, but, after all, disease occurs in childhood in simple uncomplicated forms, usually giving a clear-cut clinical picture, most of the patients bear examination well, and experience leads us to think that the students would benefit by beginning it at about the same time as the rest of clinical medicine. Another strong reason from our point of view for spreading the course over a longer period is that, on account of the seasonal incidence of many of the diseases of children, the men would see a greater variety of cases. At present those attending during the autumn often see quite a different set of cases from those which occur in the wards during spring and summer. But, however the course may be altered, it is essential that the present system of small sections, not exceeding ten to twenty men, should be retained.

The question of teaching infant feeding practically is difficult. The students are lectured to on the subject, but do not by any means get a practical acquaintance with it in the hospital, for the very good reason that the larger part of the subject is preventive medicine, deals or ought to deal with how to keep healthy babies well, and that the hospital does not handle such cases. Now that preventive welfare centres have been established in Edinburgh they should be utilised for teaching this important subject. At present we have no material for showing the student how to manage a healthy infant from birth onwards. Many of the cases he sees in hospital are calculated rather to make him despair of success than to show him how the thing should be done. Another flaw in the present course of children's diseases is that the students do no case-taking. Case-taking involves the getting of the histories from the mothers, and this has always been a practical difficulty. This part of the course could best be carried out in connection with the out-patient department, because taking cases in the

wards, without interviewing the mothers, would have comparatively little educational value.

At present the students know that they will not be examined on diseases of children, and, naturally, they tend to pay less attention to it than they would were it one of the final subjects. It ought, therefore, to be represented, in some way or other, at the final examination.

XXXI.—THE TEACHING OF THE SURGICAL DISEASES OF CHILDREN.

By JOHN FRASER, Assistant Surgeon, Royal Hospital for Sick Children.

THE first thing I would do is to draw your attention, in passing, to the very special importance which should be attached to the surgery of childhood. I do not mean to infer that it is more important than any other branch of surgical work, but there are certain underlying difficulties which never should be lost sight of.

The first of these is the special type of subject with which one is dealing. Childhood is probably the most sensitive of all the periods of the span of life. It is a period which, while marked by extraordinary powers of recovery, is also signalised by a condition in which resistance is often very low, and surgical work practised during this period has continually to be modified by these two features. Secondly, there are difficulties in the clinical diagnosis and examination of children which are not met with in adult work. Time and again you find that you get no help from the child itself, but instead you are met with a passive, and even active, resistance. This is a difficulty which is very real in clinical work, and it can only be overcome by patience and experience. In children one is dealing with the source from which the manhood and womanhood of the nation is eventually to be drawn, and errors in diagnosis and treatment during this period will react throughout the whole future of the individual's life. There are other complexities which I need not mention, for I have said sufficient, I think, to show the special importance which should be attached to the surgical work of childhood.

Now, one has to ask oneself two questions: First, is the present system of educating the student in this branch of work satisfactory? and secondly, if it is not satisfactory, how can it be improved?

In regard to the first question, what is the scheme which is at present in vogue? The student for a period of three months attends the Children's Hospital, and during that time he has an opportunity of attending four surgical cliniques a week—two in the wards and two in the out-patient department. I say that he has an opportunity of attending these cliniques, but in actual practice one finds that he is not always

very conscientious in taking advantage of them. No opportunity is afforded him for case-taking. He is encouraged to attend the operative work of the hospital, both the indoor and outdoor work, but in regard to the latter, and from the point of view of the practitioner by far the most important, one finds, with the exception of a few keen spirits, the opportunity is ignored. I daresay that with the last, one may have some sympathy, because these operations take place at 9 A.M., and this for the average student is a most unearthly hour. Such is the theoretical basis on which the work is organised, and while in theory it may appear satisfactory, I believe that in practice it leaves several things to be desired. Such is the answer to the first question, and answering it as one has, it is incumbent upon one to make some suggestions by which one believes that the opportunities for teaching could be improved.

First, let me say that in the surgical work of the hospital where the commoner maladies are concerned there is no lack of material and it is with these common maladies that the student ought to be thoroughly conversant. Now, the first suggestion I would make is that the surgical work of the Children's Hospital ought to be more closely combined with and made concurrent with the clinical teaching in the other institutions. At present the student feels that it is more or less a side issue. He believes that in his professional examination he is unlikely to be troubled with many questions which are specially related to children.

Secondly, I believe that the period which is at present allotted is insufficient, namely, three months ; at least six months are necessary.

Thirdly, the system ought to be so altered that an opportunity is given to the student for individual case-taking. That during the period while he is attending the hospital a definite series of cases, well illustrative of children's diseases, ought to be allotted to him. He should be made responsible for the taking of the cases, and, if possible, in each case he should write a short commentary upon them.

Fourthly, one would like to see his attendance insisted upon during the operations which are necessary upon these illustrative cases, and while he is in attendance the important anatomy should be demonstrated to him.

Lastly, I believe that his attendance at out-patient operations should be made compulsory, and, where the minor work is concerned, an opportunity should be afforded him of carrying out under supervision a series of operations illustrative of these minor maladies. Take, for example, such a thing as circumcision. There are very few students who go into practice having done one of these so common and yet so important operations, and there are very large numbers who begin their practical work without ever having seen one done.

There is one more point I would like to make. A great portion of one's work in a children's hospital consists of orthopædic surgery,

and I can imagine few things which are more important in general practice than this. At present the average student is often very little conversant with it, and it is a subject which can be very admirably illustrated in the wards of a children's hospital. I believe that some attention is necessary for the further development in Edinburgh of this most important branch of surgical work.

These are some of the points which one would like to bring forward. One realises that there are many difficulties in the way of their fulfilment, and I daresay that some of the suggestions may appear unnecessary, but it seems to me that to do justice to this very important branch of surgical work they at least ought to be considered.

XXXII.—DISPENSARY PRACTICE AS A PART OF MEDICAL TRAINING.

By JOHN ORR, M.D., F.R.C.P., Physician to Western Dispensary, Edinburgh.

Dispensary practice has for long been an integral part of the medical curriculum in the Edinburgh school, and has proved itself to be of value in the clinical training of the medical student.

Charitable dispensaries began to exist at an early date in Edinburgh, for we find that the Royal Dispensary was established in 1776, and is still in active operation. It was followed in 1815 by the New Town Dispensary, and then by the Cowgate, Western, and Provident Dispensaries, so that now the charitable dispensaries have come to constitute a more or less complete system for the provision of attendance on the sick poor throughout the various districts of Edinburgh.

From an early time in their history the dispensaries mapped out the city into areas, each of which was attended by a dispensary, and patients have come to know that those resident in a particular district are attended by a particular dispensary.

The clinical material was utilised for the teaching of students, but it was quite a considerable time before recognition of the dispensaries as teaching centres was conferred on them. The University Ordinance of 1861 contains a paragraph to the effect that it shall be a necessary part of the student's curriculum to attend dispensary practice for six months, although it is right to say that he was given the option of attending the practice of a physician or surgeon; and this regulation was the cause of a good deal of improvement in the teaching methods which prevailed in the dispensary clinic. This regulation is embodied in the Edinburgh University Calendar of 1864. I am not aware that there is any other medical school in this country which insists upon students attending dispensary practice, solely, I fancy, because charitable dispensaries of the kind we have in Edinburgh do not exist in the cities

where other medical schools exist. One is certain, however, that if they were available in other cities the medical school would not fail to avail itself of such clinical facilities.

The value of dispensary practice is now well recognised as a training-ground for the young teacher of medicine and for the senior student beginning, for the first time, to accept the individual responsibility of general practice. There is, therefore, at the present day no apology needed for the existence of these dispensaries as teaching centres, and it can scarcely be doubted that dispensary instruction is of considerable importance in supplementing the teaching of clinical medicine.

I take it that the discussion to-night is meant to ascertain if the best use is being made of the clinical opportunities of the dispensary, and I may recall to your minds what is being done in most dispensaries.

The work of most dispensaries consists of—

Firstly. The seeing of out-patients daily by the physician on duty.

Secondly. The attendance, at their own homes, of patients who are unable to attend the dispensary personally.

Thirdly. The seeing of special cases—ophthalmic, laryngological, gynecological, and special surgical cases—by specialists duly appointed for the purpose.

Fourthly. The dispensing of medicines from prescriptions for the cases treated both at the clinic and at patients' homes.

I. The clinic of the dispensary has usually been conducted by a young physician, and, as a rule, the physicians who have undertaken this work have been men who have been aspiring to a position of assistant physician, and ultimately physician, to a hospital; and in most dispensaries it has been regarded as a *sine qua non* that the candidate for the post of physician of a dispensary should be a Member or Fellow of the College of Physicians or Surgeons.

The experience gained by the physician in teaching at these clinics has been most valuable to the individual. It has trained him to handle patients, and to expound to the students the various clinical points which have cropped up.

But important though this side of the question is, it is not so much so as the other, that is to say, the student's point of view. Here, for the first time almost, the student comes in contact with the various so-called minor ailments. He observes how the trained physician handles the patients who come before him. It is to be remembered in this connection that the patients are not selected patients; that is to say, they are not all ear cases, or eye cases, or surgical cases, but are unassorted cases of disease requiring treatment.

The student further sees how the physician in charge ascertains what the nature of the person's malady is, makes his diagnosis, explains his treatment, and dictates a prescription, or gives dietetic or other

recommendations to the patient; or, if the case be one which requires special elucidation, the student observes how this is determined and referred to a special department or hospital.

The method of handling patients, of ascertaining leading symptoms and physical signs, and coming to a conclusion as to the case, is, in some respects, something new to the student. In the clinical wards he has been accustomed to seeing the results of such investigation when the case has been diagnosed, when the physical signs have all been ascertained and noted, and treatment in part carried out. He has previously only seen the finished diagnosis, whereas here he sees the diagnosis in process of evolution, and he is bound to learn a great deal from a dispensary teacher who is competent and interested in his work, and who is able to instruct the student in the best ways of attaining the end in view, viz. accurate diagnosis.

But the student also has the opportunity afforded him of seeing how the cases should be managed where there may be little or nothing wrong with the patient, or where there may be no abnormality, but the person imagines that there is illness present which has no foundation in fact. In short, he is shown in dispensary practice practically all the features which he may reasonably expect to meet in private practice. The dispensary, indeed, is a true mirror of what he may expect to find later in his own consulting-room.

Yet another point of importance may be noted here. In dispensary practice the student is shown not only these points referred to, and notes the treatment which is indicated, but he is also enabled to see the results of treatment, because the patient is asked to return on a certain day and report himself, and the student is able to trace the effects of treatment in every case under review.

Still further, many of the cases which come into dispensary clinics are of mild character—indeed, they are often the beginnings of disease, and it is rendered possible for students in many cases to see the beginnings of disease and to trace some diseases from the very early stages throughout the entire course until, finally, the case is recovered. For example, it is sometimes possible to see a case of herpes on the first day, when there is a rather indefinite papulation over certain areas, and where it is possible even at this early stage accurately to indicate, from the distribution of the lesion alone, that the case is one of early herpes, and the further development can be followed as the patient returns from time to time. Other examples occur to me, but it is unnecessary to elaborate further the use of dispensary practice from this point of view. It will be in the recollection of many that we recently had the opportunity of hearing Sir James Mackenzie and Dr. Robertson speaking as to the value of the recognition of early symptoms of disease, and of the great importance of prophylaxis in disease, and it seems to me that the importance they attach to both these matters

has long been recognised and pointed out by dispensary physicians to their students. There can be little doubt but that many diseases which might otherwise attain a serious character are arrested in the stage of the initial manifestations by the timely attendance of the patient at a dispensary, and the student is enabled to see these early cases and to observe how they should be handled, and in many cases, as I have shown, to see how they develop if unchecked.

Another feature of the clinic, and nowadays more than ever valuable, is that the physician is asked to furnish a certificate, for various reasons, to the patient. Certification, unfortunately, is becoming rather a burdensome feature of medical practice—burdensome because of the multiplication of certificates which seem to be requisite. Patients come asking certificates from the physician—certificates for various purposes—and state their requirements with complete truthfulness and a show of reason; but they often ask a certificate for a condition which may be outwith the physician's personal knowledge, and it is then the duty of the physician to point out to the students that a certificate should not be granted unless the facts stated in the certificate are facts which are within the certifier's personal knowledge. For example, the patient may say he has been ill for a week prior to seeing the physician, and the physician has no doubt in his own mind that such may have been the case, especially after he has examined the patient. But in so far as the physician has only seen the patient for the first time he is unable to certify that his patient was actually ill a week previously. It is thus very important to point out to the students the necessity of being excessively careful in granting certificates. A simple exhibition of such a case, and the points connected with it, are invaluable to the student and will be impressed upon his mind far more than by any amount of lecturing.

Again, the student learns much with regard to the incubation of infectious periods of the various exanthemata which break out very frequently in families, and the physician is consulted as to the possibility of certain other members of the family attending school, etc. The student thus learns by the physician's questioning of the patient as to the beginning of the case of infectious disease, and how he must deal with cases which have been exposed to infection.

II. The out-door visiting of patients by students is perhaps the part of medical work from which students shrink at first more than any other. They feel the responsibility of attending patients on their own account—and rightly so. The more students feel the responsibility on these matters, the better practitioners they are likely to turn out, simply because they are likely to realise their onerous responsibilities with regard to the sick. As a rule I recommend that students go in pairs—the one acting as a moral support to the other—and they very soon learn how to deal with these patients at their

homes; and when they are in difficulty—as they usually are with their first cases—they feel that they can rely upon the assistance of the physician in charge, who will go and see their cases with them, and will help them in their beginnings of practice.

At first many students have a very distorted idea of the value of symptoms and of physical signs, and it is only after practice in the personal management of cases that they begin gradually to appreciate the relative importance of various symptoms. It is here that the physician can help these students enormously by pointing out the various shades of difference that exist between the symptoms which they encounter. The symptoms may be the same, but are of varying importance according to their severity and their association with other clinical features. Many students think all cases with coughs are pulmonary tuberculosis, and take a highly magnified view of the severity of the case they are treating, and it is only after a little while that they begin to appreciate, under guidance, the relative value which these symptoms possess.

Further, they acquire gradually a facility in writing prescriptions for the cases they attend. At first most students have the utmost difficulty in writing prescriptions of any sort, and many of them use booklets containing ready-made prescriptions for various diseases. I am very much against the use of such booklets, because they tend to make the student give so-and-so for bronchitis, so-and so for heart disease, and such-and-such a formula for kidney disease, without definite reference to the particular manifestations of these diseases, and I insist upon students giving attention to the special symptoms which present themselves in their patients, and of treating these to the best of their ability. In certain cases students are very keen on out-door practice, and get through a great deal of useful work, and the more cases they attend, the more capable do they become in the handling of the patients in their charge, and they rapidly gain confidence in their own powers.

The special departments of eye, ear, and throat, and so on, are not usually attended by the students, because the hours are not as a rule suitable, and the number of cases attending scarcely make it worth the student's while to attend. At the same time the opportunity exists, if they care to make use of it, and those who have time do so.

Attached to most dispensaries there used to be a midwifery department (now merged in the Maternity Hospital), and there is a vaccination officer who conducts special practical courses. Most students take out vaccination in the same dispensary at which they do their cases. It is not my intention, however, to say anything about this matter to-night, as I understand it will be referred to by others, but it is wise that vaccination should be associated with dispensary practice, as in a dispensary one has, practically speaking,

a mirror of all the pieces of work which go to make up a general practice. I think that the greatest possible use is made of the clinical material of the Edinburgh dispensaries by the physicians who are attached to them; and the interest shown by the students, coupled with the regularity of their attendance, is, I think, sufficient evidence that they appreciate the lessons that are taught them there, and the efforts made to elucidate the cases which come under observation.

In conclusion let me say that I am of opinion that dispensary practice should be taken late in the curriculum if the student is to obtain the greatest benefit from it. He ought not to come before his fourth winter session, and, indeed, if he came in his last winter he would be in the best position to gain the most advantage from it, for by this time he has already attended medicine, clinical medicine, and possibly fevers and skin diseases, and is now in a position to apply his knowledge to patients who may come under his care.

The university has a direct interest in the teaching at the dispensaries, and it may one day be considered desirable to associate in a closer fashion than exists at present the dispensary physicians with the university staff. Whether this happen or not, I am certain that the dispensaries play a useful, if unobtrusive, part in the training of the medical student.

XXXIII.—THE TEACHING OF VACCINATION.

By W. G. AITCHISON ROBERTSON.

We all agree that every student should be taught how to vaccinate. We, who teach vaccination, are appointed directly by the Local Government Board, and they, through their inspectors, see that the work of teaching and the practice of vaccination are carried out in the best manner. It is an important matter that each individual student should be taught the necessity of vaccination. There is all the difference in the world between efficient vaccination and so-called vaccination, and it would be a good thing if many of our older practitioners were to attend a present-day course of vaccination instruction. A single inoculation is not sufficient for all-time protection against smallpox. The Local Government Board lay down a rule that all public vaccinators and teachers of vaccination must put four inoculations on the child's arm, and that the total area of vesiculation resulting must at least amount to one-half square inch. I think that at present all students coming to the class of vaccination are taught to vaccinate efficiently, and are thoroughly impressed with the fact that by so doing they will protect the child for many years against the chance of smallpox infection. In the vaccination course we allude to inoculations generally; we describe the after-effects of vaccination, the

method of carrying it out, the asepsis to be practised, and the complications to be guarded against. We urge the necessity of revaccination. To get into the course all we desire, we cannot do without the six lectures and practical attendances granted us. One of the registrars in Edinburgh told me recently that the number of exemptions through the Conscientious Objection Clause was fully 30 per cent., and in England it sometimes amounts to 50 per cent., or even 60 per cent., of children who are never vaccinated at all. This large number of unvaccinated people constitutes a very real risk to the community. All these points are put before the students. I usually give a lantern lecture showing the development of the vesicles from day to day, and how the lymph is prepared. The public health aspects, and finally the legal aspects of vaccination, are alluded to.

DISCUSSION.

Dr. Fleming.—I have always held that the ideal method of teaching clinical medicine would be to have the pathological specimen in the bottle at the patient's bedside—which is of course impossible. I have, however, endeavoured in teaching, say heart disease or lung disease, to give my students a demonstration of the specimens which I possess, and this helps the men to understand the physical signs better. It would be a help to those of us who do not possess museums if the Pathological Department would give demonstrations on, say, the diseases of the heart while we are giving cliniques on heart disease at the same time.

The dispensary is enormously important, and I would lay stress upon the fact that one of the ways in which a student can learn most there is by taking cases himself.

Dr. J. G. Cattanach.—I remember that this Club took considerable credit to itself for the new Ordinance of 1911, discussed first here and carried out almost entirely at the Pathological Club's suggestion; and it is only right that they should do something to remedy some of the faults that were foreseen by some of the teachers when that Ordinance came into force, *e.g.* the entire ignorance of physical signs shown by so many of our students. This is a serious fault in our Edinburgh school. A great fault lay in abolishing the tutorial system of evening classes in the Infirmary. The scheme under which we are working just now practically closes the wards to the students.

A point in Dr. Fowler's paper which impressed me was his desire that the students should see the children at seasonal times; and I think the suggestion that came from Dr. Fowler and Mr. Fraser in connection with surgery of a six months' course in children's diseases is one which should be insisted upon.

I think we are the only school who have compulsory dispensary training. But those of our men teaching in other schools have told me how greatly they miss it. I think, however, if it is not compulsory for the students it should certainly be compulsory for any young man who is going to be a teacher in our Infirmary. Should not the university have some say in selecting the teachers who are doing the dispensary work? They should take

some steps to see that the man in the dispensary is able to *teach*. I would put in a plea, too, for the six months' dispensary training that the Ordinance specifically states as a requirement. The Ordinance says "six months" with no qualification, but shortly after 1892 the clinical medicine teachers suggested and carried through an unwritten law by which, if a man takes an extra three months of clinical medicine he is exempt from three months' dispensary teaching.

If a man gets a little actual work to do, *e.g.* a small operation, he comes regularly to the course from start to finish. The student is keen on his work if he is made interested in it, and the slackness of the slacker may sometimes be due rather to the teacher than to himself. The material got at the dispensary is just the kind of material that the man meets with in beginning practice.

Dr. R. Robertson.—I can only speak as a general practitioner who has been in practice for nearly thirty years. In the last thirty years there have been tremendous changes. When I started practice it was much more common to attend cases constantly from the beginning to the end. Now a transition is taking place and the work is being more and more taken away from the general practitioner. It is now even becoming an uncommon thing for a general practitioner to give an anæsthetic. The child-welfare scheme is going to cut still deeper into the general practitioner's work, and the venereal diseases are going to make a further inroad into it. The developments in recent years of surgery, and consequently the institution of nursing homes, circumscribes still more his sphere. This raises the question: What type of practitioner are we going to have in the future? The teaching depends upon the answer to that question. As far as I can see, the general practitioner is only going to be a kind of clearing-house to send the patient here or there. I think the present type of general practitioner is going to disappear from Edinburgh, and this being so, I agree with Mr. Miles—though from rather a different point of view—that we should institute two degrees in medicine. One degree on a fairly low standard will be required. The fault of the present teaching is that every teacher thinks his subject is of paramount importance to the exclusion of every other subject, and the examinations set render it necessary for a man to be really familiar with the subject, *e.g.* in anatomy a world of detail is taught which might very well be left out. The theoretical side of medicine is treated too seriously, and insufficient attention is paid to the practical teaching. I think also that the chemical side of physiology and pathology might better be taught through a special Chair of Medical Chemistry, which I understand is soon to be instituted. Medical education should be a real education in the sense that it should not consist in cramming into a man's brain all that it is possible to know about the subject, but should teach him where and how he can get knowledge, for medicine is rapidly crystallising along the lines of specialisation. The danger of this over-specialisation is to tend to narrow a man's breadth of mind.

The dispensary work should be associated with the general practitioners in a greater degree than it is. The teaching of a knowledge of human nature is a most essential thing for success in general practice, and in this respect experienced outside general practitioners could be of immense help to the students.

Dr. Chalmers Watson.—It was part of the scheme put forward by the assistant physicians that more intimate relations should be established between the clinical department and the dispensaries, and that the teaching at the dispensary should rank as an integral part of the curriculum. The assistant physicians also suggested the advisability of the teacher at the dispensary having some intimate relation with the university proper. The suggestion we made there was that there should be a three months' course for medical students prior to their actual work in the wards—these three months to be devoted to the study of physical signs; and that a part of the instruction in that course could very properly be given by one of the teachers of the Sick Children's Hospital, thus intimately associating it with the subject of clinical medicine.

I am not in agreement with Dr. Robertson when he suggests the establishment of a degree of a lower level. I would strongly deprecate any scheme which has as its object the lowering of the present standard. The present minimum standard, on the contrary, should be very materially raised, which does not, of course, negative the advantages of an additional degree. The more we educate the student, the more, I think, do we enable him to appraise the value of modern methods of investigation. One constantly comes across general practitioners with cases where investigations of some length have to be carried out, and far too many of these general practitioners have very little interest in the nature of the investigations or any desire to know anything about them. This brings me to one of the difficulties under which the clinical teacher labours at the Royal Infirmary. We there have facilities for making careful X-ray examinations as often as we want; we can get bacteriological examinations done very frequently. One of our objects should be so to correlate the particulars ascertained by these means with the clinical signs that the student can draw his conclusions without necessarily having recourse to those first investigations. This forms an added reason for my opposition to Dr. Robertson's idea of lowering the standard.

Mr. Miles.—I should like to enter a protest against the idea that I proposed any lowering of the ordinary degree. My whole proposition, on the contrary, was that by making our teaching simpler and less elaborate we might raise the Edinburgh degree because the man would go out knowing a great deal more than he does now.

I agree with Dr. Fowler in his plea for an elementary course in medicine, partly because it would influence the teaching of surgery since the men would come to us better prepared.

I hope we will be able to co-ordinate the teaching of surgery in the Sick Children's Hospital with the teaching at the Infirmary. By arranging a syllabus we could arrive at some means of giving the students a knowledge of the elementary surgery they require in practice, and particularly in conducting these small operations referred to by Mr. Fraser. At the dispensaries minor surgery can be very well taught, the students doing the operation under the supervision of the surgeon.

Professor Lorrain Smith.—We should not lose sight of the contention in Dr. Fowler's paper to bring in physiology and pathology as contributing to the teaching of the early parts of medicine. Dr. Fleming alluded to that by suggesting that the pathologist should provide specimens to illustrate the

cases, but this would not get over the difficulty. We probably do teach pathology quite sufficiently just now to explain how the disease process disintegrates the various functions and organs which it attacks, but as far as I can make out from this and other discussions, we do not teach either physiology or pathology sufficiently to introduce the student to an understanding of the signs in a living patient, or how they are caused. I do not know that I can suggest the remedy for this. I wonder if the records that we get are insufficiently detailed on that point. Certain it is that we break down somewhere in the teaching of pathology in the interpretation of physical signs. The student should be master of the physical signs before he comes to the ward to study cases, and this being so, the preliminary subjects of physiology and pathology ought to help in this instruction.

Dr. Robertson is mistaken in the idea that the teachers of the scientific subjects are in any way attempting to push their subjects to the exclusion of the central subjects of the course, viz. surgery, medicine, and midwifery.

Dr. Orr.—I may perhaps illustrate what Dr. Fowler has in his mind in regard to physical signs in this way. One has, say, a case of pleurisy with effusion. One asks the student why in such a case we are unable to hear breath signs at the surface of the chest. The almost invariable answer is that fluid is a bad conductor of sound. That is partly true and partly untrue. Fluid *is* a very bad conductor of sound if the vibration is in the first place produced in another medium. When the sound vibration is transferred from one medium to another it suffers an enormous diminution. If then passed into a fluid, it suffers a further diminution of sound. The student is not taught that if a sound vibration is produced in a liquid medium in the first instance, the liquid medium conducts the sound admirably. Again, the student cannot understand why in a case of sarcoma of the lung there is nothing heard over the chest-wall, because the sound vibration produced by air in the first instance is transferred to a solid medium. It is the half-truth that creates the difficulty.

Dr. Eason.—In consultation with the assistant physicians, I was responsible for suggesting that a preliminary course should be held in the study of physical signs of health. I feel very strongly that at the present time, and especially since the fairly recent changes in the medical course, this course is more than ever a necessity. It was not so necessary when the student took up the study of clinical medicine after the study of surgery, and so at a later part of his course. I am therefore in agreement with the tendency of the last few meetings and with Dr. Fowler as regards this preliminary course, but I think it would be a mistake if in it any reference whatever were made to the subject of disease or morbid conditions. The student must get a fair grasp of the signs of health before coming to this at all. If he studies the two together confusion will result in his mind.

Dr. Ker.—We all agree with Dr. Fowler and Dr. Eason that a preliminary course of physical signs would be an advantage. But does Dr. Fowler propose to add any more time to the curriculum for it? Restriction of such a class to five or ten men would present a very practical difficulty. Mr. Fraser's suggestion of a six months' course instead of a three months' would be very difficult to arrange. Another point which interests me extremely is the

seasonal question. We have certain diseases more or less epidemic at certain seasons—for instance, measles. Sometimes years have passed during which the student of the autumn course has not been able to see a case of measles. Of course, while all these things are extremely useful, to carry them out we must cut down something. We should therefore limit the teaching to things which are really useful to the general practitioner: for instance, only a broad general idea should be given of nervous diseases, and a man should not be rejected in his examination because he does not know the exact lesions in some obscure case of nervous disease.

The full six months should be exacted for dispensary teaching. It is *very* useful to the men afterwards, and is one of the best points in the Edinburgh teaching.

Dr. Fleming.—Let me explain what I mean by having a pathological demonstration of specimens in connection with clinical teaching. In teaching mitral stenosis, for instance, I first give a clinique on that subject, and then bring up a great many specimens, showing why the left auricle becomes so big, and so on. A collection of typical specimens from the Pathological Department which could be gone over by the teacher in the earlier part of each summer and winter session would be very instructive to the student.

Dr. J. S. Fraser.—There ought to be a syllabus in every class of what it is essential that the student should be shown. The men may be shown many other things, but there ought to be an irreducible minimum of cases of each particular sort which they ought to see.

Dr. Chalmers Watson.—It would increase the value of pathological and clinical work—especially in cardiac and lung pathology—if we had a clinical-pathological museum in the Infirmary, for I do not see how this co-ordination can be efficiently effected unless the specimens are in some museum in more immediate relationship to the wards. In addition to the pathological specimens, X-ray photographs of different stages in the clinical history taken during life would aid both teacher and student materially in this co-ordination. It would be useful, also, if we could have X-ray photographs of the cadaver.

Dr. Traquair.—As for raising or lowering the standard, I have always imagined that by Mr. Miles' scheme it would be raised for the lower degree, because the student would have, I understand, certain things cut out from his curriculum, as, for instance, a knowledge of the intricacies of difficult surgical operations, but that he would be examined and passed on a standard of about 100 per cent. as to his knowledge of simple things. The essential thing is that the student should not be allowed to graduate unless he knows thoroughly the things a young general practitioner ought to know.

The meeting to-night interests me in that it is the first to deal with special subjects. Here again the question of time comes in. Which special subject is the most important one? It seems extraordinary that diseases of children should have almost as little time allotted to it as diseases of the eye, ear, or skin. A very large proportion of the general practitioner's work will be amongst children. If any course has a claim to extended time, it is surely the one on diseases of children.

I think what Mr. Fraser said as to the surgery of children having no place

in the final examination is sound. The students know that their passing or failing is not dependent on that class, and therefore do not pay so much attention to it as they might.

One feels that special subjects might be presented to undergraduates rather as a part of clinical medicine and surgery than as specialities. The teaching might be limited to the essentials, but the student should be expected to know these essentials up to the general standard of the final examination. The teaching of special subjects as such might well be cut out of the undergraduate course.

I have often wondered whether nothing could be done by making a post-mortem examination more or less into a clinical lecture. I have often felt in regard to eye cases that I would very much like to be present at the post-mortem examination to see the inside of the head and eye, but up to the present such opportunities have been rare.

Dr. Fowler said in reply.—A most important practical point is whether the course I suggested would increase the curriculum. I do not think it would, for I do not propose to teach the students any more than at present. In mentioning the size of the class as five or ten, I was speaking specially of one subject—physical signs—which must be taught in small sections. The whole medical side should be thrown open, and the men of course would not all be doing physical signs at the same time. With regard to extending our own course, I do not ask for more time, but simply a rearrangement. Why should something more not be done for fevers? Why should the men not come out in sections for nine months once a week?

With regard to the teaching of physical signs in relation to morbid anatomy, I said less about pathology because I know that pathology is the one subject already taught in relation to clinical medicine. A good deal of the difficulty about relating pathological specimens to signs is probably due to the fact that the pathologists do not get the data. I think also that when a post-mortem examination is made, the clinical tutor who knows what the signs during life were should be there to explain them to the men.

I was glad to hear from Dr. Chalmers Watson that this scheme falls in with his suggestions. The difference in mine is that I antedate it and that it should be run independently of ward cliniques. I agree with him about the value of radiographs. I find them very instructive for myself and for teaching. I did not make any suggestion that the Sick Children's Hospital should be associated with the preliminary course: I must admit I did not think of it. Dr. Eason thinks we should begin with the signs of health only. That is quite true in a way, but it might make the teaching rather academic, and my idea is to make the course interesting, and that is why I put in the short ward clinique once a week.

Dr. Orr said in reply.—I quite agree with Dr. Cattanach that minor operations should be shown to the students. For long I have done so, and sometimes I have shown them larger operations. I think what Dr. Traquair was pleading for, viz. the correlation of special diseases with ordinary general diseases, is best shown in dispensary work, because there the physician in charge has an opportunity of getting many eye and skin cases coming in for ordinary treatment, and it is a very pleasant duty to show how these special diseases are associated with ordinary systemic constitutional causes.

RECENT ADVANCES IN MEDICAL SCIENCE.

MENTAL DISEASES.

UNDER THE CHARGE OF

JAMES MIDDLEMASS, M.D., F.R.C.P.E.,
Sunderland Mental Hospital.

The Need of Closer Relationship between Psychiatry and the Medical Schools.

As a physician in an important mental hospital, Dr. Ruggles considers that the training for service in such institutions in the United States is far from satisfactory (*Amer. Journ. of Insan.*, October 1917, p. 149). As the conditions are somewhat similar in this country his criticisms are equally applicable here. In very few medical schools is a knowledge of psychiatry required of candidates for a degree, and little is done to interest prospective graduates in this important specialty. His recommendations for improving this state of matters are five in number.

1. Raising the standard of psychiatric teaching in all medical schools. For this several things need to be done. Normal psychology should be taught in such a way as to enlarge the views and extend the interests of those who have to deal with its morbid aspects. Neuropathology should also have a place in the curriculum of all medical schools, and those who are attracted to the study of mental diseases should have ample facilities for practical research in this subject. Mental hygiene is becoming of increasing importance from the public health point of view and should be included in the course of instruction of all mental specialists.

2. A knowledge of psychiatry should be made compulsory for all registered medical practitioners. It is they who see mental cases in the early stages and they should all know how to recognise and treat them.

3. Knowledge of the opportunities presented by practice in psychiatry should be disseminated in the medical schools. This is an important matter. At present men enter it as a rule fortuitously and consequently many of the best students never give it a thought. If the opportunities for research and the inherent interest and importance of the subject were brought before these students, some of them would no doubt take it up, thereby doing themselves and the specialty great benefit.

4. Better opportunities should be provided for post-graduate study. This also is a necessity if good men are to be attracted to the service. It should be available for all entering asylum practice, so that from the

beginning his outlook may be on a wide scientific plane before he is involved in administrative problems. These will then be approached in a proper spirit, administration being made subservient to the main objects of his work—the cure of his patients.

5. A system of case records from a number of hospitals, asylums, and general practice, such as exists in some places, should be made more general. These would enlarge the experience of all those engaged in various branches of work and enable each to benefit and improve his treatment of cases coming under his own care. One case might be seen by men in many different spheres of work, and if its inception, progress, and termination could be read by all in concise case records all would be in a better position to treat similar cases in their future practice.

It is to be hoped that the reading of Dr. Ruggles' paper at the annual meeting of the American Medico-Psychological Association in New York in May last year will stimulate interest in the study of mental diseases in the United States and lead to real advances in its practice.

Psychiatric Problems at Large.

Another interesting paper read at the same meeting as that referred to above is that of Dr. Rosanoff (*Amer. Journ. of Insan.*, October 1917, p. 157). In it he gives the results of an enumeration of cases of mental disorder in Nassau County, New York State, carried out in 1916. The sources of information were very varied and included the records of many public and charitable societies, State Departments, Eugenics Record Office, charity organisation societies, poor law authorities, police court records, divorce court proceedings, district nurses, clergymen, physicians, social workers, State and other hospitals, jails, and elementary schools. This list shows the broad foundation on which the study was based. In addition four districts in the county were selected and each individual was traced and interviewed. The number of people in these districts was 4668. In the whole county the population at last census (1915) was 115,827. Of these 1592 were found to be "abnormal" mentally. This gives a percentage of 1·37. Of the total number affected 394 were insane, 72 were epileptic, 634 feeble minded, and 492 constitutionally inferior (inebriate, criminal, etc.). Some of these are already looked after, and of the rest not all would need institutional treatment—about 60 per cent. of the whole. For most of these there is at present no psychiatric treatment at all, and the writer strongly urges that this task should be undertaken. Children who are backward at school should be specially attended to and provided for in separate classes, in the interest of normal children as well as their own. The establishment of mental clinics has not apparently been as successful as was

hoped. For this there seem to be two reasons. The public generally have not yet recognised their usefulness, and attendance has not been frequent enough to impress this usefulness on the public. Where they have been well advertised they have been made use of so long as they were kept in the public eye, but at once fell away when this ceased. It is suggested that instead of waiting till patients come to these clinics the physicians of asylums should have assigned to them the duty of visiting any reported case in his own home. This in any case would probably be necessary, as environmental conditions are now recognised as potent factors in the production of many psychical abnormalities. It would provide interesting and useful work for the staff of the asylums and relieve them from some of the monotony of routine work. Such a scheme would necessitate close co-operation between various authorities, but the beneficial results of such action would soon become apparent. It is to be hoped that steps on these lines may soon be taken. If so, they will be watched with very great interest.

Extra-Asylum Psychiatry.

This paper is closely related in its subject to the two preceding ones (*Amer. Journ. of Insan.*, January 1918, p. 425). In it Dr. Pierce Clark makes a comparison between the practice of asylums a quarter of a century ago and now. In the most enlightened institutions at the present day in the United States the investigation of medical and surgical cases is carried out with almost as much care and thoroughness as in a general hospital. This is an exceedingly good thing for the patients, but it is even better for the assistant physicians. Not nearly all of these will continue to devote their lives to the study of mental disease but will take up general practice, in which a knowledge of psychiatry will be found to be of very distinct benefit. Dr. Clark advises all asylum physicians to keep closely in touch with general medicine and surgery, and recommends that many of them should be allowed to live outside and visit the asylum, as the staff of a hospital do.

At present there appears to be in the United States a growing demand for the services of specialists in the domain of mental hygiene, which is year by year assuming greater importance and showing signs of increasing usefulness. If this demand is to be met it behoves the asylums to give the training necessary for those who must meet it. In order to do this Dr. Pierce Clark urges them to make adequate preparations. It seems, too, that there is a serious danger that this demand may be met by so-called psychologists, and not, as it should be, by fully trained medical men. The danger exists now and must be avoided at all costs. Some of the warnings uttered in this paper might be the better for being listened to in this country. They might

be discussed now, even if they could not be put into immediate operation.

Does the Gold-sol Curve Indicate Syphilis?

The gold reaction seems to have been much more extensively used in America as a test for syphilis, and so for general paralysis, than in this country. In his latest paper Dr. Weston gives the details of three cases where the Wassermann test was negative after repeated examination, but in which the gold test was positive on more than one occasion (*Amer. Journ. of Insan.*, January 1918, p. 431). In none of the three cases was there a history of syphilis, and none showed unmistakable signs of the existence of general paralysis. One was an epileptic. The question asked by the author is that at the head of this abstract. It is, however, as he confesses, impossible to answer it definitely at present. In a footnote added after the paper was written it is stated that one of the cases has given a positive Wassermann reaction after an interval of two years from the first examination. It shows the necessity for caution in making general deductions regarding a new process. As the writer states, time must be allowed to elapse for the examination of more cases, especially those which can be submitted to post-mortem investigation.

The Neuroglia in a Case of Sarcoma of the Brain.

This study is reported by Dr. Ricksher (*Amer. Journ. of Insan.*, January 1918, p. 381). The patient, a man of 49, was ill for only eight months. At the autopsy a sarcoma was found in the right hemisphere on the mesial surface. Sections showed the tumour to be a spindle-celled sarcoma. Neuroglia cells were seen in the tumour, but they were much degenerated. At the edges of the tumour the neuroglia cells showed signs of active proliferation. They were of different types. Some were without fibres, and resembled amœbæ; others took the form of variously shaped astrocytes; while a third form were large, with well-defined bodies and processes. These different cells were present only in the immediate neighbourhood of the tumour, and no doubt owed their activity to the stimulus arising from the morbid growth. This is also to be seen even more clearly in the vicinity of old softenings and hæmorrhages, and gives a clue to one at least of the functions of the neuroglia cells. The spread of the tumour along the blood-vessels could be traced with great clearness. A number of photomicrographs add much interest and instruction to the paper.

Prognosis in Manic-Depressive Insanity.

In this paper Dr. J. B. Macdonald discusses the question of prognosis in certain cases of insanity based on a study of 451 patients

in Danvers State Hospital (*Journ. of Nerv. and Ment. Dis.*, January 1918, p. 20). These cases were taken consecutively and not subjected to any selection. Grouped according to age-periods at which the first attack occurred the figures are:—Up to 25 years, males 36, females 80; from 25 to 40, male 44, female 132; from 40 to 60, male 47, female 100; above 60, male 4, female 8. Total males 131, females 320.

Grouped according to the nature of the first attack the results are:—Depressed 245, manie 152; mixed or modified 54. Of the total cases, 295 had more than one attack. In 100 of these each attack was one of depression, in 128 all were of mania, in 20 of the circular type, and in 149 the type of attack was irregular. The tendency to recurrence was greater in cases originating with excitement. When the first attack was one of depression the interval between the attacks was on the average about $10\frac{1}{2}$ years; when it was one of excitement the average interval was a little over six years.

From the figures given above it will be seen that the greatest number of cases occurred in the period of maturity (25 to 40 years), the percentages being 25 to 40 years, 40; 40 to 60, 33; up to 25, 25; and over 60, 2 to 3. It was also noticeable that cases which had the first attack in the period of maturity also showed a greater tendency to recurrence. After the age of 40 recurrences occurred at shorter intervals, especially in manic cases, the average interval being 3·8 years for men and 1·5 years for women.

As to the final outcome of the disease, this became worse the younger the patient and the more frequent the attacks. Most of them ended in dementia. They resembled in some particulars cases of dementia præcox. This directs attention to the question: Is there any essential difference between these two diseases?

As to cases occurring at a later age the prognosis was better, and the more so the shorter the duration of the attack. If the first attack occurred after 40 there was much less chance of complete recovery. Depression, especially in women, seemed to offer least hope of a favourable result.

Of the cases examined, 43 per cent. had a history of insane heredity. This was the minimum and not the maximum, many histories being entirely absent or seriously incomplete. Many cases with a bad heredity made good recoveries and had no recurrences. The whole paper is one of great interest and practical importance.

NEW BOOKS.

X-Ray Atlas of the Skull. By A. A. Russell Green. Pp. x. + 27. With 11 Plates. London: Longmans, Green & Co. 1918. Price 10s. 6d.

This atlas consists of eleven plates, designed to show the appearance of the various parts of the skull when viewed antero-posteriorly at varying angles. Taking as the standard plane that which passes through the nasion and the external auditory meatus on either side, the author has compared the appearances when this plane is coincident with the axis of the rays, and when it is set at angles of $-30°$, $+30°$, $+60°$, and $+90°$ to that axis. On one side of the picture the parts are brought out in colour, whilst the opacity of certain structures has been increased by outlining sutures with wire and injecting sinuses with a more or less radio-opaque mixture. The results are likely to be of value in increasing the precision of localisation when foreign bodies have penetrated the cranium. The measurements given in this table, whilst in the main correct, are needlessly refined. It is never really practicable to localise a body so accurately that the measurement of its depth in millimetres can be given, as is done in this table, to four significant figures. The plates are well produced, and the publishers have performed their part of the work thoroughly well.

Lecithin and Allied Substances: The Lipins. By Hugh Maclean, M.D., D.Sc. (Monograph on Biochemistry.) Pp. vi. + 206. London: Longmans, Green & Co. 1918. Price 7s. 6d. net.

This eminently readable monograph from the pen of Dr. Maclean is a valuable addition to biochemical literature, establishing as it does order in one section of that most chaotic group of substances, the lipoids. The term lipin is employed by the author to designate two classes of fat-like bodies; the phosphatides including such substances as lecithin and kephalin, and the cerebrosides—phrenosin and kerasin. The work includes in its scope not only animal but also plant lipins. A considerable portion of the text is devoted to the composition, structure, elementary analysis and properties of the substances dealt with, and concise practical methods for their isolation and purification are given. There is a chapter on protagon, definitely proving it to be a mechanical mixture of cerebrosides and not a chemical compound; and another on alleged lipins, dealing with substances such as jecorin. A concluding chapter is devoted to what is known of the function of lipins, in which the part played by lipins in metabolism and growth,

their influence on oxidative processes, and their action as digestive ferments are touched upon. A very complete bibliography is appended to the work.

The Spleen and Anæmia: Experimental and Clinical Studies. By R. Mills Pearce, E. B. Krumbhaar, and C. H. Frazier. Pp. 419. With 16 Illustrations. Philadelphia and London: J. B. Lippincott Co. 1918.

In this volume dedicated to the anonymous benefactor who established the John Herr Musser Department of Research Medicine in the University of Pennsylvania, splenectomy is considered first as a means of studying in animals the relation of the spleen to blood destruction and regeneration, and second as a therapeutic procedure in the treatment of diseases of man accompanied by anæmia especially affecting the red blood-cells. The chapters on experimental and metabolic observations are based on the authors' own work in the past five years. These have been rewritten and rearranged from their papers on the medical periodicals so as to offer a consecutive comprehensive presentation of the general experimental problem. Clinical studies of the splenomegalies and of the results of splenectomy in such cases associated with anæmia or jaundice or both are presented by Dr. Krumbhaar. In the various chapters of this volume there is brought together for the first time the modern views concerning the classification, diagnosis, and treatment of the non-infectious splenomegalies characterised by blood destruction. The final section by Dr. Frazier gives details of the technic of the operation of splenectomy in man.

The work is one which appeals to investigators along various lines and to surgeons and physicians. It is not in the ordinary sense a clinical volume, but rather one for the specialist clinician. To those who are engaged in special work the bibliography of 486 references is of enormous value. There is also a very full index. The illustrations are well chosen and greatly enhance the value of the book. The authors have performed a very real service for which they deserve to be congratulated. The publishers' share in the work also deserves very high commendation.

Applied Bacteriology. Edited by C. H. Browning. Pp. xxvi. + 291. With 1 page Illustration. London: Henry Frowde and Hodder & Stoughton. 1918. Price 7s. 6d. net.

Dr. Browning has collected in this volume twelve previously published papers on bacteriological subjects, written by himself and other representatives of the Glasgow and Middlesex Hospital Schools of Clinical

Pathology. Each paper has been rewritten, extended, and brought up to date.

The greater part of the book deals with original and very recent work, such sections as those on "enterica," on brilliant green enrichment in the isolation from faeces of bacilli of the typhoid-paratyphoid group, and on antiseptics, being laboratory studies on present-day war problems.

An ably written article on tetanus is addressed to the clinician as well as to the bacteriologist, but we believe that it is to the laboratory worker that the book will be most valuable. There are useful lists of references to recent work upon the subjects dealt with.

NEW EDITIONS.

Medical Electricity. By Dr. H. Lewis Jones. Seventh Edition, edited by Dr. L. W. Bathurst. Pp. xvi. + 588. With 197 Illustrations. London: H. K. Lewis & Co. 1918. Price 15s. net.

A seventh edition of the late Dr. Lewis Jones' well-known book on medical electricity has been revised and edited by Dr. L. Wood Bathurst, but the subject has grown so much during the last few years that it is difficult to get a comprehensive account of it in one volume and from any one individual writer. Considerable attention is given to ionic treatment and to the use of condenser discharges in diagnosis, both favourite subjects of the late author, but the space allotted to radium as a therapeutic agent is meagre. There are interesting observations regarding the motor and sensory effects associated with the current waves from different types of medical coils, and it is pointed out that the effect on the contraction of striped muscle seems to be alike both for long and for short waves proceeding from such a coil, but the effect on sensation decreases as the waves grow shorter, for the production of sensation by electric currents is a matter of the transportation of ions, and with short waves the movement of ions is small.

The Practice of Pediatrics. By Charles Gilmore Kerley, Professor of Diseases of Children in the New York Polyclinic Medical School. Second Edition. Pp. 913. With 136 Illustrations. Philadelphia and London: W. B. Saunders Co. 1918. Price 28s. net.

There is perhaps no branch of medicine which has made greater advance during late years than that of pediatrics, and those who are

able to look back on the earlier days must be struck with the improvements in methods of diagnosis and treatment. Therefore it is that practitioners and students will welcome a new edition of Professor Kerley's valuable text-book, in the preface to which he indicates how much there is of new material, as well as amended chapters.

One would wish to emphasise the chapters on infant feeding and the disturbances of nutrition. These disorders of the alimentary tract are often very much a matter of climatic conditions, and, as might be expected in a work coming from a country subject to extreme and rapid changes in temperature, the gastro-intestinal complaints have received very full and adequate considerations. In these days when child welfare has come so much into prominence, those who are interested in the carrying out of the details of the movement will derive much help from the chapters on infant feeding.

The articles on tuberculosis also merit careful study, indicating what has been so often emphasised on this side—the importance of dust contamination and the housing problem, as shown in tenements where the occupants so often change their dwelling-places, and all unknowing come straight in upon tubercular infection. The comparative figures in abdominal tuberculosis probably differ to a certain extent from our own, this being due to the varying qualities of the milk supply.

These problems and many others dealt with in this book we hope to see dealt with in the near future. Altogether this is a work well worth having within reach.

NOTES ON BOOKS.

Minor Maladies and their Treatment, by Leonard Williams, M.D. (Baillière, Tindall & Cox, price 7s. 6d.), is a most useful well-written book which ought to be at the elbow of every young practitioner. It treats of many ailments—coughs, colds, indigestion, headaches, etc.—which are constantly cropping up, but regarding the treatment of which little help can be got from systematic text-books. This, the fourth edition, contains a new and interesting chapter on "minor glandular insufficiencies," and the only word of adverse criticism to the book is that here the author is inclined to make dogmatic statements on a very large subject which is still in the melting-pot.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES.

CASUALTIES.

DIED on service, Lieutenant-Colonel WILLIAM M'CALL, R.A.M.C. (T.F.).

Lieutenant-Colonel M'Call graduated M.B., C.M. at Glasgow University in 1892, and before the war was in practice in Birmingham.

KILLED in action on 9th August, Lieutenant-Colonel ARTHUR JOHN ALEXANDER MENZIES, D.S.O., R.A.M.C.

Lieutenant-Colonel Menzies was educated at Edinburgh University, where he graduated M.B., Ch.B. in 1912. He gained the D.S.O. in 1915 at Loos.

KILLED in action on 21st July, Captain JOHN CAMERON THOMPSON TEGGART, R.A.M.C.

Captain Teggart, after graduating M.B., Ch.B. at the University of Glasgow in 1912, acted as House Surgeon and House Physician at the Western Infirmary, Glasgow.

DIED on service on 22nd July, Captain JAMES WALKER BEATTIE, R.A.M.C.

Captain Beattie graduated M.B., C.M. at Aberdeen University in 1878, and M.D. in 1889. Before the war he was in practice in Sunderland, where he held various public appointments.

DIED of wounds on 2nd August, Captain ROBERT CARMICHAEL ROGERS, R.A.M.C.

Captain Rogers was a graduate of Edinburgh University, M.A., M.B., Ch.B., 1914. After acting as House Physician in the Royal Infirmary, Edinburgh, he went into practice at West Calder.

DIED on service at Allahabad, Captain JOHN CROSS, R.A.M.C.

Captain Cross graduated M.B., Ch.B. at Glasgow University in 1903.

KILLED in action, Captain ERIC NEWTON, R.A.M.C.

Captain Newton graduated M.B., Ch.B. at Glasgow University.

ACUTE INTUSSUSCEPTION OF THE COLON IN THE ADULT.

By JAMES M. GRAHAM, F.R.C.S., Temporary Assistant Surgeon, Royal Infirmary.

Intussusception is a comparatively rare cause of intestinal obstruction in adults. According to Miles, only 12 per cent. of cases occur after the age of 10. It appears from the recorded cases that the symptoms in adults are less characteristic than those produced in children; in infants the condition is almost always acute and the symptoms are urgent, whereas after the age of 5 the symptoms are subacute or chronic in 44 per cent. of the cases (Walton). There are further contrasting features between the affection as it occurs at different ages, especially in regard to the predisposing causes and the relative frequency of the various sites primarily involved. It is the exception to find in young children a definite morbid condition responsible for the onset of the intussusception. Conditions such as a swollen Peyer's patch, or less often an inverted appendix or a Meckel's diverticulum, may start invagination, but in the great majority of cases, apart from irregular peristalsis, no abnormal factor is present, unless perhaps an unusual degree of mobility of the cæcum and ascending colon.

In adults, on the other hand, a definite pathological lesion is frequently observed which is responsible for the onset of the intussusception. Eliot and Corscaden record, in an analysis of 300 cases of intussusception in the adult, that a tumour was present in 100 of the cases; in 60 cases the tumour was benign and in 40 malignant. The simple intestinal polypus, adenoma, or papilloma has been found more often than any other tumour; less often a localised carcinoma, and in rarer instances neoplasms, such as fibroma, lipoma, or myxoma, occur. Other lesions, such as tubercuIous, typhoid, or simple ulcers, have been described from time to time. It must be acknowledged, however, that even in adult cases of intussusception there is an absence of any obvious exciting cause in a large number of cases.

In infants and young children the entero-colic variety of intussusception occurs in at least 80 per cent. of the cases; in adults the enteric and colic forms are common but the relative frequency of the different types in adults is difficult to determine

exactly. From a study of a large number of recorded cases certain general conclusions may be drawn. The ileo-cæcal variety is the commonest type in adults, as in early life; the enteric variety is slightly less frequent, while the colic form is present in approximately 25 per cent. of the cases. In most of the cases of acute intussusception of the colon a neoplasm has been present near the apex of the intussusception. When the process of intussusception has been excited by an ulcer, whether tuberculous, typhoid, or simple, it can be stated that the colon is rarely primarily involved. It is exceptional, therefore, for the acute form of colic intussusception to occur in the adult without the presence of a tumour which is usually small in size and which may be either benign or malignant.

The object of this communication is to record two cases of acute intussusception of the colon occurring in adult women, one of them a mental case suffering from Hirschsprung's disease. Both cases were characterised by the presence of a meso-colon in the normally fixed parts of the bowel and particularly by an unusually long pelvic meso-colon. It was possible to examine digitally the apex of the intussusception in both cases and to exclude any local pathological condition to explain the onset.

Case I.—Female, æt. 22, inmate of Rosslynlee Asylum. The patient was suffering from dementia præcox.

She had been admitted to the asylum at the age of 10 and there was no information regarding her earlier history. Although slightly depressed and mentally enfeebled she was fit enough to work in the laundry for some years. Lately, however, she had shown signs of suicidal tendencies and had become somewhat violent. With the exception of colds in the winter the patient was never laid up. She was a rather thin, spare woman of medium height; her complexion was naturally sallow and she was habitually constipated, requiring regularly large doses of castor oil and other strong purgatives. It had been observed that her abdomen was fuller than could have been expected from the general state of her nutrition.

Six weeks before the acute illness which necessitated operation she had suffered from what was considered to be a severe prolapse of the rectum; this had existed for two hours before it was reduced, with difficulty, under an anæsthetic.

On 9th October 1917 the nurse reported that the prolapse had recurred, but from the appearance of the extruded bowel it was concluded that the prolapse had existed for some hours before the nurse's attention had been drawn to it. The protrusion was not greater in extent than on the former occasion, but the bowel was much more swollen and

congested and every effort at reduction under chloroform anæsthesia failed.

It was accordingly decided without further delay that surgical intervention was necessary. The writer saw the patient about ten hours after the onset of the symptoms. The pulse-rate was 100 and the temperature 97° F. She appeared to be suffering from a moderate degree of shock. She complained of cramp-like pains in the abdomen and of severe tenesmus. The abdomen was distended but no abdominal mass was palpable.

The patient was anæsthetised and placed in the lithotomy position. The appearances were now sufficiently striking. An elongated mass of bowel protruded from the anus, at first glance suggesting an enormous prolapse of the rectum; but that this was not the case was demonstrated by the fact that the finger could be passed between the mass and the margin of the anus. It was obvious, therefore, that the case was one of intussusception in which the apex of the intussusceptum had reached beyond the anus to an unusual degree. The intussusceptum measured 14 ins. in length from the anus to the apex, which reached below the patient's knees. Where it protruded the mass was firmly grasped by the anus, which was stretched to its utmost limit. The size of the protrusion was in proportion to its length; at the anus, where the intussusceptum was firmly compressed, the bowel measured 3 ins. in diameter, but beyond this level it became progressively greater in girth, till near the apex it approximated in size to two closed fists placed together. The mass was distinctly heavy and hung limply downwards unless supported; its surface was formed by the everted mucous membrane of the colon greatly swollen and plum-coloured from strangulation. There was a considerable amount of mucous discharge, stained with blood, from the patulous lumen at the apex, and the surface also was moist and slimy. There was no sign of gangrene or of ulceration of the mucosa.

It was impossible to reduce the intussusception either by firm compression or by pressure with the finger in the lumen in the axis of the bowel. As the neck of the intussusception was not within reach of the finger, resection of the mass and suturing of the entering bowel to the sheath could not be done from below and the patient was therefore prepared for laparotomy.

Operation.—An incision was made on the left side of the middle line from a point a short distance above the umbilicus downwards to immediately above the pubis, and the rectus muscle was displaced outwards.

On opening the peritoneal cavity the first object that attracted notice was an enormous coil of large intestine, identified as the transverse colon. This presented the appearance typical of a moderate degree of Hirschsprung's disease. The colon was about 4 ins. in

diameter, and in spite of distension its coats were firm and hypertrophied. The cæcum and right half of the colon showed the same changes, but to a less degree. The small intestine in its lower part was distended, but presented no hypertrophy and otherwise was normal. The appendix was not abnormal in any way.

The pelvic colon could not be found, but on tracing the transverse colon the descending colon could be followed into the pelvis, where it was tightly gripped by the neck of the intussusception. The pelvic colon, iliac colon, and part of the descending colon were therefore involved, and these parts, except for a few inches, were entirely outside the abdominal cavity. The neck of the intussusception was almost on a level with the pelvic floor, and there was therefore no mass to be felt within the abdominal cavity.

Further efforts were now made by an assistant to reduce the intussusception by pressure from below, but with no effect.

Under ordinary circumstances traction on the entering bowel is dangerous and contra-indicated, but the conditions in this case were quite unusual; instead of dealing with normal intestine the colon was thick and strong and it was possible to apply a degree of force on the entering bowel, which in the ordinary case of intussusception would have been impossible without tearing of the bowel or of its mesentery. By steady traction within a few minutes disinvagination began, and once started, reduction was soon completed.

Although deeply congested the parts involved in the intussusception were viable. At the apex, situated above the middle of the pelvic colon, the coats of the colon had almost a rigid consistence, the result of congestion, œdema, and extravasation of blood. The iliac and pelvic portions of the colon formed an enormous loop which, when brought outside the abdomen, reached to the manubrium sterni. The corresponding mesentery was thick and infiltrated and remarkable for its length. The left half of the colon showed in a marked degree the dilatation and hypertrophy as well as the increase of length characteristic of Hirschsprung's disease.

In consideration of the patient's previous history and the likelihood of a recurrence, the pelvic colon was fixed to the adjacent anterior abdominal wall by silk sutures inserted close to the point of origin of the invagination. Before closing the abdomen a long rectal tube was inserted and guided upwards, allowing a considerable amount of flatus to pass.

The patient made an excellent recovery, and ten months after the operation it was reported that there had been no recurrence of the intussusception.

The particular interest of the above case is in the occurrence of intussusception in a case of megalocolon. So far as I have been

able to ascertain, no such occurrence has been recorded in the literature.

It had been noted before, and also after the operation, that the patient was constipated and that the abdomen was moderately distended and fuller than normal, but the symptoms resulting from the condition of the colon were not particularly marked. Although it is exceptional for the symptoms of Hirschsprung's disease to appear in adult life, such cases are well known. As Wilkie has pointed out, the symptoms may not attract attention till adult life or even middle age is reached, if hypertrophy is able to compensate for dilatation. In this case the hypertrophy was more pronounced than the dilatation.

In the absence of any local disease it must be concluded that the onset of the invagination was due to irregular peristalsis. It is recognised in Hirschsprung's disease that peristalsis may be active and even visible in the distended colon; probably, however, the thick and relatively rigid coats prevent invagination from readily occurring. It must be remembered, also, that in children Hirschsprung's disease is comparatively rare and that the pelvic colon is chiefly affected, whereas intussusception even in normal children is confined to the enterocolic variety in the great majority of cases. Both intussusception and megalocolon are rare in the adult, and even if there was a relation between the two, of which there is no evidence, the association of the two conditions would be extremely rare.

Case II.—The patient was a married woman, æt. 42. She was seen on the 3rd of March 1918 and operated upon the same day in the Deaconess Hospital.

The symptoms began with acute abdominal pain six days prior to operation. After lasting for a few hours the cramp-like pains complained of disappeared and for twenty-four hours the patient was perfectly comfortable. On the following day, however, the colicky pain returned and persisted, with slight remissions, till relieved by operation. For four days the patient vomited frequently and was unable to take food. During the period of illness the bowels were constipated and no flatus was passed, although several enemata had been given. Finally the patient complained of pain and tenesmus in the rectum. On examining the patient it was obvious that she was suffering from acute intestinal obstruction. The vomited material was becoming brown and fæcal in odour and the abdomen was distended, but sufficiently lax to permit a firm oval swelling to be felt low down in the hypogastrium rather to the left of the middle line. The character of this swelling suggested the possibility of an intussusception, and this

diagnosis was confirmed by rectal examination. The apex of the intussusception was within easy reach of the finger; the lumen of the invaginated bowel could be explored and there was no sign of a tumour or of any other lesion.

The patient was transferred to hospital and the abdomen opened by a vertical incision to the left of the middle line. The incision was made from a short distance above the umbilicus to a point above the pubis, and the rectus muscle was displaced outwards.

The intestines were distended and congested. The transverse colon was found dragged downwards and to the left into the pelvis, where it was tightly gripped by the neck of the intussusception. The patient was placed in the Trendelenburg position and the intestines were packed off. The mass formed by the intussusception was entirely within the pelvis. It was short, thick, and fusiform in shape, and small for the amount of bowel compressed within it. The apex was pressed against the pelvic floor and it was impossible to get beyond it with the fingers. Any operative procedure, had such been necessary, would have been exceedingly difficult. Reduction was attempted by firm compression of the distal end of the intussusception, but with no result. Pressure from below by the assistant's fingers in the rectum made no difference. Gentle traction on the entering bowel was found to be useless and dangerous and threatened to tear the mesentery. It appeared at this stage as if the sheath would have to be incised, a step which would have added greatly to the seriousness of the operation, because of the difficulty of access and of the exact suturing which would be required. A final, and successful, attempt was therefore made to undo the invagination by compression. This was only accomplished after compressing the distal end of the mass for several minutes with the utmost force which could be applied.

The sheath was observed to unroll itself at the neck, and once started, reduction continued almost without further assistance, or at least with only the slightest compression beyond the apex.

The invaginated bowel was swollen and congested and specially firm at the apex, which was situated in the descending colon. The bowel was not seriously damaged, but a few bleeding points in the mesentery required to be tied.

The descending and iliac colons possessed a mesentery which was continuous with the transverse and pelvic mesocolons. The pelvic colon formed a considerable loop, with a much longer mesentery and a wider range of movement than normal.

A few silk sutures were inserted between the colon near the point at which invagination had begun and the adjacent parietes in order to limit the mobility of the colon, a procedure which in the case previously observed had apparently prevented a recurrence of the intussusception.

The patient made an uninterrupted recovery, and although she has

occasionally had slight colicky pains in the abdomen there has been nothing to suggest a recurrence of the previous condition.

In both of the writer's cases the extent of the intussusception of the colon was undoubtedly due to the loose attachment and mobility of the left half of the colon. In the absence of a polypus or other local exciting cause of irregular peristalsis it seems probable that undue mobility of the colon predisposes to the onset of these rare cases, and that it is advisable to fix the colon near the point at which the intussusception has begun in order to lessen the chances of a recurrence.

AN UNUSUAL CASE OF SUICIDAL GUNSHOT WOUND.

By Captain B. J. RYRIE, R.A.M.C.(S.R.).

The case which is here reported presented certain features of a rather puzzling nature, and although the injuries were quite clearly proved to be suicidal, it is not difficult to conceive of circumstances in which from their nature they might have aroused the suspicion of homicide. For this reason, as well as its intrinsic interest, the facts are worthy of record.

On 16th June 1917 I was called to examine the body of a soldier who was stated to have shot himself. Post-mortem examination revealed the following conditions:—

In the fifth left intercostal space anteriorly, half an inch within the nipple line, there was a small circular wound, obviously a wound of entrance of a shot fired close to the body. Posteriorly in the eleventh left interspace there was a wound of exit, small in size and with slightly everted edges. Between these points the bullet had passed through the pericardial sac, grazing the apex of the left ventricle, and tearing away the superficial myocardium in that area. It had then passed through the diaphragm into the abdomen, and penetrating the fundus of the stomach and tearing away the upper and inner angle of the spleen, had re-entered the chest, passed through the base of the left lung, fractured the eleventh rib, and left the body by the exit wound above mentioned. The left pleural cavity contained a large quantity of blood, and the peritoneal cavity contained blood and stomach contents.

In the anterior part of the right temporal region there was an entrance wound similar to that seen on the chest. No corresponding exit wound was present. A clean-cut round hole was found in the squamous temporal bone on the right side. On the left there was a slightly elevated fracture of the parietal bone near its anterior margin. Just behind the fractured area were found two service revolver bullets which had been telescoped the one into the other. The track of a single wound passed through the substance of both frontal lobes. The cortical substance in the lower Rolandic area on the left was extensively destroyed where the bullets had apparently rotated after striking the bone. No other signs of disease or injury were present.

Two points especially drew one's attention:—(1) The almost directly backward direction of the body wound; (2) the presence

of two bullets in the cranial cavity, with only one entrance wound and one track through the brain, these having followed the same path so accurately as to telescope. Examination of the revolver showed that these two bullets had entered the skull together.

The story was as follows:—On account of some irregularity the deceased was to have been returned to his depôt, and reduced in rank. He apparently considered his senior N. C. O. as partly responsible, and some unfriendliness resulted, but soon the men were apparently on friendly terms again. This senior N. C. O. came to inform the deceased that a conveyance was ready to take him to his new quarters. He was speaking to someone, and at the same time pushing open the door, when a shot was fired from the room through the door, wounding him in the left hand. Then other two shots were fired, and when the room was entered the deceased was found lying dead on the floor

The wound in the N. C. O.'s hand was a slight one, and the bullet passed through into the superficial tissues in a direction toward the trunk.

The assumption made was that he had first attempted to shoot the N. C. O. and had then committed suicide.

Three possible explanations suggested themselves:—(1) Deceased had been murdered; (2) deceased had attempted murder and had committed suicide; (3) deceased had committed suicide and accidentally wounded the N. C. O.

1. *Deceased had been murdered.* No suspicion of murder was entertained by the Court against the N. C. O.

His wound was slight, and directed towards and not from his own body, as would have been the case had he sustained it in attempting to shoot another man. Examination of the revolver showed that only three shots had been fired, and post-mortem examination showed that all three had been fired into the body of the deceased. Since two were found in the cranial cavity it followed that the one which ended its course in the hand of the N. C. O. was the same which had traversed the body of the deceased and the door of the room, so that the N. C. O. must have still been in the next room when he was wounded, that is, when the first shot was fired into the body of the deceased. The finding of two bullets in the skull therefore disposed of that explanation.

2. *Deceased had attempted to shoot the N. C. O. and had then committed suicide.* This appeared a reasonable assumption from the story. It was assumed that deceased harboured resentment against the N. C. O. Three shots were known to have been fired.

The first was assumed to have been fired through the door at the N. C. O., while the other two accounted for the body wound and the head wound of the deceased respectively.

The post-mortem examination showed, however, that three shots had entered the body of deceased, and evidence combined with examination of the revolver showed that only three shots were fired. There had therefore been no attempt on the part of the deceased to shoot the N. C. O.

3. *Deceased committed suicide and accidentally wounded the N. C. O.* This was the correct decision. The first shot, fired low for his heart, did not immediately prove fatal, but passing through his body had penetrated the door and wounded the N. C. O., who imagined this shot was fired at him. The deceased then raised the revolver to his head and fired, but the first shot missed fire and the bullet lodged in the barrel of the revolver, to be driven out by the third bullet. Both bullets were then carried into the skull by one wound of entrance and along one track in the brain, but such was the damping effect of the first bullet in the barrel that the bullets were not driven through out of the skull. This third shot proved fatal.

It is stated that a revolver must almost inevitably burst if fired while the barrel is obstructed as by a former bullet. It appeared more impossible that a man already injured could fire two shots in succession into his head so accurately along the same line as to telescope the bullets. Examination of the revolver showed a distinct bulging of the barrel where the jamming occurred. This appears to be an extremely rare accident.

THE TRAINING OF THE STUDENT OF MEDICINE:

An Inquiry Conducted under the Auspices of the Edinburgh Pathological Club.

XXXIV.—THE EDUCATION OF STUDENTS IN VENEREAL DISEASES.

By Brevet-Col. L. W. Harrison, D.S.O., K.H.P., R.A.M.C., Officer-in-charge and Lecturer in V. D., Military Hospital, Rochester Row.

I should like to discuss the education of students in venereal diseases from three points of view: (1) Its present deficiencies, as judged by results; (2) the necessity of remedying these deficiencies; and (3) the lines on which I think that the student should be educated in venereal diseases.

To consider first the deficiencies of the student's education as judged by results. From 1910 until the outbreak of the war I was teaching venereal diseases to newly joined officers of the R.A.M.C., which was then attracting the best men from the medical schools. I came to the conclusion, from conversations with them and from the questions which they put to me, that if venereal diseases were being taught in the medical schools the effect was very slight as regards the imparting of any useful knowledge of the subject.

In 1913 I stated in my evidence to the Royal Commission that many of the evils due to venereal diseases could be prevented if general practitioners knew more about their modern diagnosis and treatment. I was then told that this defect in their education would probably soon be remedied, as examiners were beginning to ask questions on the subject, and medical schools would soon find that it did not pay to neglect it. I do not know to what extent the student's knowledge is tested at the present time, but some little time ago I was told by a specialist in venereal diseases, who is an examiner, that he always asked questions, and that as a rule they were quite creditably answered. This specialist seemed to think that as much was being done as was necessary to educate the student in venereal diseases, and was rather inclined to oppose my efforts to induce the medical schools to start special courses for their students. I could only reply by relating my experiences, which, I thought, entitled me to speak with greater authority than an examiner. In the course of six months in the early days of the war over seventy officers reported to me for duty in a large venereal hospital which I organised overseas. Many of these temporary officers were newly qualified, but it is no exaggeration to say that, with the exception of about half a dozen, none of them joined with any useful knowledge of venereal diseases. Nearly every one of them had to be trained in the work after joining before he could be trusted with

the ordinary routine, and supervision of treatment was no sinecure. Since that time I have had the opportunity of teaching about four hundred practitioners, and have found in most of them the same lack of precise knowledge of the simple but important facts relating to venereal disease. For the most part, too, these were practitioners who were sufficiently interested in the subject to put themselves to considerable inconvenience in order to attend classes of instruction. One could not help feeling the pity of it, that in a post-graduate course one should have to confine oneself to the A B C of the subject. Again, in the course of my hospital work I have had many opportunities of judging this matter from the state of patients sent in for treatment or opinion, and from the letters which accompanied them.

To mention only a few of the important points in which I have found the practitioner's knowledge of venereal diseases defective, let me instance the diagnosis and treatment of syphilis. It has been known for some years that the earlier the diagnosis of syphilis is made and the treatment commenced, the better the outlook for the patient, and that if one waits for the Wassermann reaction to become positive the chances of obtaining a rapid cure are considerably diminished. It has also been known that there is nothing easier than the diagnosis of syphilis in its earliest stages: all that is required is a microscopical examination of the exudate from the sore under dark-ground illumination. This method is better than the naked eye, since it is available on the very first day the sore appears, long before it has assumed typical characteristics; it is better than the Wassermann test, because the Wassermann reaction cannot be expected to be positive until the sore is about fifteen days old, by which time valuable time has been lost. It is also known that the surest method of defeating the microscopical method of diagnosis is to apply an antiseptic to the sore beforehand. These are well-established facts, and facts, too, which one would say were not difficult to remember. Yet what usually happens? Out of some hundreds of primary sores which have been sent to my hospital for an opinion, I can hardly remember one instance in which request was made by the sender for a microscopical examination. Almost invariably the request is for a Wassermann test, and not infrequently the medical officer concerned has been treating the sore with antiseptics for a number of days, thus delaying the diagnosis and wasting most valuable time.

Again, one finds repeated evidence of ignorance in the use to which the Wassermann test is put in diagnosis. There is no more useful laboratory procedure than the Wassermann test, and no more reliable when it is properly carried out, but it does not dispense with the necessity of a clinical examination. Yet it seems almost as if the majority of practitioners now thought that it did, and had comfortably dismissed from their minds the necessity of remembering even the

commoner clinical appearances of syphilis. Here, in spite of obviously syphilitic lesions syphilis is excluded because the Wassermann reaction is negative. There, every lesion which coincides with a positive Wassermann reaction is diagnosed as being itself syphilitic in nature, regardless of the fact that obviously it is possible for a syphilitic patient to suffer from other ailments than syphilis.

The appearances of even the commonest syphilitic rashes and lesions seem to be unknown, and I have met large numbers of instances where the patient has been under treatment for the most diverse complaints for weeks, all the time presenting signs of syphilis which it required only the most elementary training to recognise. I have thought sometimes that the practitioner concerned must have received a shock when he looked at last at the genitals of some of these patients. Such delay in diagnosis is neither fair to the patient nor to his neighbours, because the patient becomes thoroughly saturated with the disease, and his saliva and discharges are a constant danger to others from the point of view of accidental infection.

In regard to treatment, it is still common to see patients who have recently received only a few weeks' treatment by mercurial pills and then ceased, without any attempt having been made by the practitioner to impress on them the great importance of continuing treatment. It is commoner to find patients who have received one or two injections of "606" or similar compound and then been told that no further treatment is necessary. We hear on all hands of the carelessness of patients about the continuance of treatment after outward symptoms have disappeared, but I feel sure that there would be less of this if practitioners generally were not quite so vague about the minimum treatment and observation required by a syphilitic patient.

In short, I find that the average general practitioner possesses very little knowledge of syphilology that is precise and really useful. He may be able to deal with late syphilis—visceral gummata, tabes, and such-like wreckage, but he is vague as to the best methods of diagnosing and treating venereal diseases in the earliest stages, when so much more good could be done. His lack of precise knowledge contributes materially to the spread of venereal diseases. Directly so, because he fails to render his patients non-infectious; indirectly, because he fails to impress on his lay public the importance of applying early for advice and of abiding by that advice.

I have spoken chiefly about syphilis, but much the same could be said about the average treatment received by the sufferer from gonorrhœa. A small syringe and a bottle of lotion for local treatment, and some sandal-wood oil to be taken by the mouth, seem to be the routine, while simple disappearance of the discharge is considered sufficient evidence for the pronouncement of a cure.

The fact is that too many practitioners still look on venereal

diseases as outside their province, and one cannot wonder that syphilis and gonorrhœa levy the toll on our national resources that they do.

A certain amount has been attempted towards the remedying of these defects in the education of the practitioner. The Local Government Board, in its regulations as to the conduct of venereal clinics, lays stress on the importance of encouraging practitioners to attend the practice of those clinics. Some time ago the Panel Committee of London obtained the consent of the Director-General A.M.S. to my conducting post-graduate classes at Rochester Row, and nearly four hundred practitioners attended. Numbers of them travelled many miles across London to attend these classes, and the inconvenience to which they put themselves generally testifies to a growing desire for this kind of instruction.

Latterly, at the instance of the National Council for Combating Venereal Diseases, the Director-General A.M.S. has ordered that all newly-joined temporary medical officers shall spend ten days at Rochester Row, solely with the idea of the instruction which they receive there being useful to them when they return to civil practice. All this is so much to the good, but I do not think it is sufficient, in view of the importance of venereal diseases to the country. I hold strongly that the acquisition of a knowledge of the simple and important facts regarding the diagnosis and treatment of venereal diseases should not be left to the chance of a practitioner taking a post-graduate course, but be drilled into the student, and that he should be tested in his knowledge of the subject before his admission to the qualified ranks of the profession.

It will be granted that the medical curriculum should equip the student with a knowledge which is likely to make him of the greatest possible use to the community in matters relating to the prevention and cure of disease. Admittedly he cannot be equipped with a knowledge of all diseases, and those must be chosen which are most important to the health of the nation. How do venereal diseases stand in these respects? Do they, or are they likely to, affect a sufficiently large proportion of the population to justify their inclusion in the curriculum? Would their neglect have such a depressing effect on the efficiency of the nation as to cast a grave slur on those responsible for that neglect? Could they safely be left to specialists, as some suggest? I think that, on all these points, it is not difficult to make a strong case for the inclusion of venereal diseases in the curriculum.

Consider first the prevalence of venereal diseases. Before the war the Royal Commission estimated that syphilis affected not less than 10 per cent. of the urban population, and that gonorrhœa must be much more prevalent. Judging by the experience of other countries, one would say that this estimate was a very conservative one, and that gonorrhœa was about three times as prevalent as syphilis. I grant, of

course, that before the war it would not have been hard to find in a day large numbers of practitioners who had hardly ever seen any venereal diseases, but that was no guide to the prevalence, because it is notorious that very many patients suffering from venereal diseases resort to quacks. A better test is to be found in the statistics as to the prevalence of children's complaints due to parents' venereal diseases and the mortality statistics relating to diseases which are directly or indirectly due to syphilis and gonorrhœa. I must refer you to the facts collected by the Royal Commission, which revealed the penalty we were paying even then for our neglect in these matters.

It is not, however, so much a question of prevalence in the past as of probable prevalence in the future. As to this, I believe that it is inevitable that we shall have a huge increase of venereal diseases when the war is over. At the present time there are a large number of infected women in the country. When the war is over and the Army demobilised the first effect of the reaction from its perils and hardships will be a very considerable increase of promiscuous sexual intercourse with these infected women. I would remind you that the responsibility for dealing with the resulting venereal diseases will fall on the civil community, for it will affect the *demobilised* army—civilians, that is, over whom the Army authorities will have no sort of control.

I need hardly dilate on the disastrous effects which widespread infection of the people with syphilis and gonorrhœa will have on the economic strength of the nation unless we insure that these diseases are efficiently treated. I would only remind you of the losses we should incur from abortions, still-births, early deaths, insanity of adolescents, and blindness, from disease conveyed to offspring—the loss of efficiency from the later effects, especially of syphilis, on adults, which is exemplified by the mortality statistics compiled by insurance societies and the facts as to the late effects of syphilis in over four thousand cases which were collected by Mattauschek and Pilcz. Besides all this, we have more insidious effects which may not be recognised as syphilitic in nature but are nevertheless due to the spirochæta pallida. The frequency with which pathological changes are found in the cerebro-spinal fluid in the secondary stage of syphilis gives ground for the belief that many more syphilities must suffer from syphilitic arteritis of cerebral vessels than are recognised. Such arteritis must result in chronic cerebral anæmia and mental dulness. Only those cases where there is a definite breakdown are usually recognised, but the history of many of these—how they have been mentally dull for years—leads one to suppose that there must be large numbers of others who, without actually breaking down, are the worse intellectually for harbouring the spirochæta pallida. Further, I could give you numbers of instances to prove that the old syphilitic breaks down more easily under stress and strain than the normal person, and

altogether the syphilitic is a person whose value to the nation has definitely depreciated from his acquisition of this disease. At a time when we shall require our man-power in its greatest strength of numbers and efficiency for the economic struggle which is before us when peace is declared, can we afford the depredations which venereal diseases will make on it unless we take adequate steps to deal with them? Are we, the medical profession, on whose shoulders rests the responsibility for taking those steps, to sit back, do nothing, and fail the nation in this matter? I trust not, when we could do so much, when we have in our hands the means which, properly applied, would save the population from the disastrous effects of these diseases.

In the first place, we have excellent grounds for believing that if antiseptics are applied at once to the contaminated parts, the gonococcus and the spirochæta pallida, both of them the most delicate of organisms, will be killed, and no infection result in the great majority of cases. We know also that gonorrhœa can be aborted after commencing if treatment is applied before the discharge has become purulent. In regard to syphilis, all statistics show that the most brilliant results are obtained in the group of cases where treatment commenced before the Wassermann reaction became positive, and that the smallest incidence of syphilis of the central nervous system and other *sequelæ* of syphilis occurs amongst the well-treated cases. Thus Mattauschek and Pilcz, in their analysis of syphilis cases watched for twenty years, showed that out of 851 indifferently-treated patients no less than 204 subsequently developed syphilis of the central nervous system; while out of 1139 which had been energetically treated only 83 developed these *sequelæ*. Wile and Elliot analysed 120 cases suffering from late syphilitic manifestations, and found that 50 per cent. had received no treatment at all, while all but one of the remainder had been treated indifferently. On the other hand, out of 40 well-treated cases watched for four years, only 4 had developed later manifestations.

The surest preventatives, then, of the disastrous effects of venereal diseases are immediate sterilisation in the first instance, and early and thorough treatment when this fails. For the universal application of these simple facts to the problem we require that the lay public shall appreciate them. The lay public must be taught that venereal diseases are a national matter, that a man who allows his venereal disease to run on is committing a crime against the State, and that no quack can abort either syphilis or gonorrhœa. There is only one person who can drive the lesson home, and that is the general practitioner. The specialist may impress a few and the set lecturer a few more, but the general practitioner comes intimately into contact with the lay public, and by casual remarks in the course of his routine work he can influence more than any of these. But he must know

the subject; he must provide something better in the way of treatment and advice than the quack; he must be smart with his diagnosis and precise in his directions for treatment; otherwise he will effect very little. So long as general practitioners are vague on the subject of venereal diseases, so long will the public remain ignorant and careless.

I believe that the general practitioner should be in a position to make a microscopical examination when required and to administer the first treatment, whether it is for the abortion of gonorrhœa or the injection of a dose of neosalvarsan with a syringe. I do not think that venereal clinics would be able to cope with this part of the work to nearly the same purpose as the private practitioner. Speed in the application of the first treatment is of paramount importance, and if all cases converged to a clinic in the first instance, delay would be inevitable. Once the first blow has been struck the clinic can continue the attack.

Apart from all this, it is certain that in any case large numbers of patients will seek the advice of general practitioners, and it is of vital importance that these should be consistent in their advice; otherwise patients will lose confidence and discontinue treatment too soon.

I have attempted to show, then, that venereal diseases will inevitably affect a large section of the population; that unless they are properly treated they will have a perilously weakening effect on the efficiency of the nation; that we have in our hands the means of averting this great peril, and on our shoulders will rest the responsibility for any neglect to apply those means. I hope I have proved also that in this matter the first line of defence is the general practitioner, and that the responsibility for equipping him to bear his part in that defence rests with those who have in their care the education of the medical student. I think I have said enough to prove that venereal diseases must become an important subject in the curriculum of the medical student.

I should like to conclude by mentioning a few points which I think are important in the education of anyone in venereal diseases.

In the first place, familiarity with the microscope is all-important. The syphilologist who cannot use a microscope is terribly handicapped, because he loses valuable time in despatching and waiting for reports on his specimens. The atmosphere of mystery surrounding the microscope should be dissipated by thorough training in its use. After all, microscopy is only another form of inspection—simpler, surely, than percussion and auscultation. I should like to suggest that some practical instruction on the subject could with advantage be included in the physics course, and that some low-power dark-ground microscopy in the practical zoology course would add greatly to its interest. As to other subjects which bear on the treatment of venereal diseases,

I hesitate to suggest, but it would help greatly if the chemist and pharmacologist were to direct some of their teaching to an understanding of the remedies used in the treatment of syphilis.

With regard to the special course in venereal diseases, I think this should be held throughout a winter session, and I am strongly of opinion that it should include some laboratory training. Students should be taught to take and examine specimens for themselves, and to make the most of poor sources of light in dark-ground microscopy. As to training in the Wassermann test, admittedly this is purely a laboratory procedure, but it helps the understanding of it if students are made to practise it, as I have found in my own classes. I think that about a dozen or fifteen lectures would suffice, but students should be drilled into the systematic examination of patients until no abnormality of the skin or mucous membrane escapes their notice. They should be trained in the technic of intravenous and other injections. I admit it is anxious work for the teacher, but it is a great thing to make a student realise that an intravenous injection is not such a terrible affair after all. Altogether, one would say that three teachers would be directly concerned in the training of students in venereal diseases—the pathologist, the syphilologist and dermatologist, and the genito-urinary surgeon.

Lastly, I think that the examination should be separate. For example, it should not be possible to make up for deficiencies in knowledge of venereal diseases by proficiency (on paper) in the art of performing a fore-quarter amputation.

XXXV.—THE TEACHING OF TUBERCULOSIS FOR UNDERGRADUATES.

By Professor Sir ROBERT PHILIP, M.D.

The *motif* for the teaching of tuberculosis to the undergraduate is to be found, on the one hand, in the extraordinarily large part played by tuberculosis in mortality and disease incidence, and, on the other, in the rapid advances which have recently been made in the knowledge of tuberculosis—pathological, epidemiological, clinical, and sociological.

The widening of outlook in relation to tuberculosis—as in relation to syphilis and cognate diseases—is one of the most remarkable of the present-day developments of medicine. Whatever shape the changes which are looming in the practice of medicine may finally take, it is abundantly evident that the practitioner of the future will have much closer relationship with the diagnosis and prevention and treatment of tuberculosis. If he is to be of effective value, his opportunities for study of the disease in all its aspects must be widened.

The medical outlook on tuberculosis has been completely changed. Official mortality statistics have been re-enforced by remarkable records

testifying to the immensely frequent incidence of tuberculosis in one or other form. Reference may be made to the latest observations of the kind published by Reinhart (Berne) last October, who found that 96 per cent. of the bodies coming consecutively to post-mortem examination at the Berne Pathological Institution showed tuberculous lesions. Dividing them into cases which presented activity of the lesion and cases which showed more or less completely healed lesions, he states that 32 per cent. presented evidence of progressive tuberculosis within the system, while in the remaining 64 per cent. there was evidence of healed tuberculosis. Without labouring the point, it will be freely conceded that the record goes to prove the large part played by tuberculosis in the day-by-day work of the practitioner of medicine.

This is evidenced in similar, if less striking, fashion by statistics available in relation to our large hospitals. For some time back, by arrangement with the Managers of the Royal Infirmary and through the kind offices of the Registrar, I have had the facts regarding the incidence of tuberculosis in the various wards of that institution tabulated. The interesting result is that in the course of the past year some 650 cases were under treatment for recognised tuberculous lesions.

The following table illustrates the variety of tuberculous manifestation represented in the ordinary work of a general hospital. Had out-patient departments been included, the list would have been enormously greater.

Cases of Tuberculosis Discharged from the Royal Infirmary, Edinburgh, during the year from 1st February 1917 to 31st January 1918.

Cervical glands	196
Lungs and pleura	108
Brain (meningitis)	13
Spine	9
Abdomen	93
Kidney	9
Bladder	1
Testicle	10
Epididymis	3
Prostate	1
Vas deferens	1
Uterus	1
Salpingitis	4
Generalised tuberculosis	12
Abscesses	27
Sternum	4
Humerus	3
Wrist	10
Hand (dactylitis)	5
Axilla	8

Shoulder	6
Elbow	5
Hip	27
Trochanter	2
Femur	3
Knee and other joints	23
Leg	3
Tibia	2
Ankle	7
Foot	13
Nasal septum	1
Mastoid	1
Eye (keratitis)	4
Malar bone	1
Larynx	3
Middle ear	2
Maxilla	1
Skin	28
Total,	650

It is noteworthy that these facts relate to a general hospital which deals in chief part with adult cases. If reference be made to the incidence of tuberculosis in the *clientèle* of the Sick Children's Hospital, it is not too much to put the figure at approximately 50 per cent. of the whole.

As is well known, there has gradually developed during the past thirty years an increasing direction of effort, communal, national and international, towards the problem of tuberculosis. From 1911 to 1912 onwards in this country the subject has been more seriously dealt with by the State and a scheme of prevention and treatment has been recommended for adoption throughout the country. A special tuberculosis service has been projected, including tuberculosis officers of various grades. When the need for such officers was admitted and their appointment approved, it was clearly recognised that the national anti-tuberculosis scheme would be successful in proportion as the general practitioners throughout the country had their attention and interest awakened in the matter.

The Departmental Committee on Tuberculosis recommended (Interim Report, p. 27) "that special regard should be given to securing the co-operation of medical practitioners in the working of the tuberculosis schemes, particularly in relation to the early detection of the disease and its domiciliary and dispensary treatment."

And in the Final Report (p. 16) the Committee advised as follows :—

"*Medical Education.*

"The Committee are of opinion that additional facilities should be afforded to medical students and practitioners to acquire familiarity

with the methods of diagnosis of tuberculosis, more especially in its earlier manifestations and with the methods of treatment. They desire, therefore, to make the following recommendations:—

"1. Medical students and practitioners should be afforded facilities to attend the practice at tuberculosis dispensaries, sanatoria, and other institutions.

"2. It is advisable that tuberculosis dispensaries should, where possible, be directly associated with schools of medicine."

During the five years that have elapsed since the Departmental Committee issued a Final Report, their recommendations regarding methods for the prevention and treatment of tuberculosis have been generally accepted and action on a large scale has followed throughout the Kingdom on the lines proposed. Similar developments are in progress throughout the Empire. These have necessarily been interfered with considerably by the war, but the machinery has been created for work on large and well-defined lines, when circumstances will allow.

Soon after the issue of the Departmental Committee's Report, the attention of the late Principal Sir William Turner was drawn to the matter and to the facilities which existed in Edinburgh for the teaching of the subject. He took the view that steps should be taken by the University towards implementing the recommendations of the Departmental Committee. The foundation of a Chair in the University was the result.

With a view to the training of students, special care was taken, at the time of the amalgamation of the Tuberculosis Institutions of Edinburgh, that the Agreement between the Corporation and the Committee of Management of the Royal Victoria Hospital should be framed so as to safeguard all the privileges attaching to the several institutions in the interest of students of the University of Edinburgh.

Clause fifth of the Agreement reads as follows:—"In respect that the Royal Victoria Hospital, Tuberculosis Dispensary and Farm Colony have in the past afforded to students of medicine unique facilities for the study of tuberculosis, the second parties (*i.e.* the Corporation) shall, in the event of the University of Edinburgh establishing a chair or lectureship in relation to tuberculosis, give all reasonable facilities, under regulations to be made by them from time to time, for the purpose of the teaching of such chair or lectureship in connection with the work carried on by the second parties in the said Hospital, Dispensary and Farm Colony, and for the purposes of research."

The Agreement, embodying the above stipulation, was subsequently ratified by Act of Parliament.

The foundation of the Chair stereotypes the recognition by the University of the place tuberculosis occupies in the everyday work of the medical practitioner and in the large field of preventive medicine. The subsequent resolution by the University that the Class of Tuber-

culosis should be included in the Regulations among the classes qualifying for graduation has further consolidated the position.

The question whether undergraduates are at present adequately equipped for the recognition and treatment of tuberculosis is uncompromisingly answered by the reply made to me by a tuberculosis officer with whom I happened recently to discuss the matter. His response to my question as to how much he had learned of tuberculosis during his medical curriculum at one of the English universities was, "just as much as I did of shipbuilding!"

Putting aside the poetic setting, I am satisfied that, with our present outlook on tuberculosis, his answer is substantially correct. The horizon of the student requires to be widened in respect of the part he will find tuberculosis play in his work from day to day. This can only be effected in a course which includes a consideration of the different aspects of tuberculosis—pathological, clinical, and preventive.

The attention of the student must be diverted from the *last* stage of tuberculous disease, whether in the form of advanced pulmonary, genito-urinary, abdominal or other tuberculosis, to its completer consideration as an infective disease. Starting from the initial infection, he must be trained to think of the earliest clinical and pathological manifestations and the possibilities which await the patient if these are not checked. His earliest object-lesson should be the guinea-pig with its local sore at the point of inoculation and the gradual spread through the various groups of lymphatic glands to the finished picture when the different viscera are involved. His thought regarding the occurrence of tuberculosis in the human subject and its further developments must be guided along exact scientific lines. He must be trained to recognise the varying indications of localised disease according to the date and course of the spread and likewise the evidence of systemic intoxication. Both on the pathological and on the clinical side, the course must be richly illustrated and made as practical as possible.

A few examples may be cited under the several heads:—

1. *Pathological.*—The course will comprise a study of the life-history of the tubercle bacillus, the methods of its culture and its relationship to other organisms. The student will be taught the best methods for the detection of the tubercle bacillus in discharges, secretions, etc. The various concentration methods, notably the anti-formin method, will be practised in connection with staining proceedure and making of cultures direct from sputum. The course will similarly include the revised study of pathological specimens in relation to clinical facts and a consideration of the pathological principles underlying the preparation and use of tuberculin and the meaning and value of blood-tests.

2. *Clinical.*—This will be as practical as possible. The endeavour must be to illustrate the clinical manifestations of tuberculosis in the widest sense. The various methods of diagnosis will be rehearsed and

refined. The advances and adaptations of physical diagnosis will be studied, including X-ray examination. The value and uses of tuberculin in diagnosis and treatment will be demonstrated practically. The principles underlying prognosis and the factors which guide its determination will be discussed in relation to cases undergoing treatment.

Opportunity will be given for observing sanatorium methods in operation, with especial reference to aerotherapy, a fixed regimen and dietary, rest and movement, skin hygiene, etc. In relation to treatment, the progressive changes observable from week to week will be illustrated as far as possible by showing patients undergoing treatment at successive stages. In this way the immediate effects of tuberculin therapy, general and local, the progressive effects, the selection of cases for tuberculin therapy, the methods of its use and the principles of dosage, will be studied. At the same time the possibilities of chemotherapy will be considered and the significance and value of drugs and operative lines of treatment.

3. *Preventive.*—Etiological factors will be considered, including the different aspects of environment and milk supply. Opportunities will be given for the observation of preventive methods at the various institutions concerned with this part of the work, including the Tuberculosis Dispensary. The purpose and methods of the Tuberculosis Dispensary as a centre for receiving and handling the varying types of tuberculous disease will be studied and its functions as a centre from which there passes to the homes of the community a practical knowledge of the principles of prevention through the visits of officers and nurses.

It will be a leading aim of the course to enforce the principle embodied in the Tuberculosis Dispensary, namely, that the protean manifestations of tuberculosis are the varying resultant of a common cause acting under varying conditions calling for separate consideration, that, if prevention and treatment are to be worthy of the name, tuberculosis must be *sought for* in the household and in the community, and that it cannot be regarded as sufficient to wait until tuberculosis presents itself at a stage when refinement of diagnosis is unnecessary and treatment largely futile. The methods and results of the "march-past" of households and the measures for the correction of faulty environment and nutrition are subjects of first moment. Attention will also be paid to the need for correlation and co-ordination of the different elements in an efficient anti-tuberculosis scheme.

As to the *place of the course in the curriculum*, it seems feasible that the subject should be dealt with in a course of, say, twenty to thirty meetings which should be largely practical. It is desirable that the course should be attended by senior students who have for the most part completed their training in clinical medicine and surgery.

XXXVI.—TEACHING OF INFECTIOUS DISEASES.

By CLAUDE B. KER, M.D., F.R.C.P.(Edin.).

It does not appear necessary to say very much on the question of the teaching of infectious diseases. This is not because the subject is not an important one; on the contrary, as I am in the habit of telling my students, it has one claim to importance which is not shared by any other subject in the curriculum. When a man makes a bad mistake in medicine, surgery, or, let us say, ophthalmology, the results of that mistake are purely a matter between him and his patient. The latter may die or be left crippled, the former may be liable for malpraxis, but that is all. But if he makes a mistake in the diagnosis of an infectious disease he may quite easily be responsible for the origin of an outbreak which may be extensive and fatal. It is undoubtedly the fact that many smallpox outbreaks are directly due to the original case being regarded as chickenpox, and even a small outbreak of smallpox is extremely expensive to the community concerned. As regards infectious diseases, then, we have, besides the medical attendant and the patient, to consider a third factor—the general public.

It was to protect the general public, in fact, that the General Medical Council made compulsory a class which up to that time had not received academic recognition. The regulation demands twelve attendances in the wards of a fever hospital, and I am inclined to think that this is all that can be reasonably expected from the student. It is obvious that a few more meetings would be of great value, but the same could be said of any clinical course. What we have to remember is that each of these twelve hours means nearly two and a half hours of students' time owing to the distance of the hospital from the university, a difficulty which applies to other medical centres also. In these circumstances it would be far from easy to fit in extra hours.

The suggestion has been made that the course should be systematic as well as clinical, and that the Professor of Medicine should drop the subject from his lectures. I cannot see that such a change would be of any advantage to the student who gets excellent instruction on fevers in the Course of Medicine under the present arrangement. Any change would probably result in his being lectured for twelve or fifteen more hours than he is at present, as it is not to be expected that the lectures on medicine will be reduced by that amount.

The student at present is advised to attend the course in his fourth year. I think he should come as late as he can, but attendance in the summer session has many advantages, and his last summer session is, in most instances, a year before he qualifies. The fact that the class of medicine is now held early in the course has removed the anomaly

which used to exist, that men sometimes attended fevers before knowing anything at all of general medicine. It is very necessary also, from my point of view, that the student should have read either the notes on infectious diseases which he has taken in the class of medicine, or some short text-book on the subject, before attending the clinics.

The clinics are mainly devoted to diagnosis and management. My main object is to show as much as possible on each occasion that the men attend. It is for this reason that it is so important that they should come with some knowledge of the subject, as otherwise the variety of the demonstrations might be a little confusing. There is very little time for discussion or explanation if many cases in several different wards have to be demonstrated, but if a man has a fair idea of the general course of a disease and of its more important complications he is able to appreciate the main points presented by the different cases which are shown to him.

It would be a great advantage if the number of students attending a clinic were less. Before the war about eight sections of thirty men each used to attend annually and one section of women. The repetition involved in the teaching of the same facts nine times in the year is very trying to the lecturer. Otherwise a limitation of the numbers to fifteen men per section would be an improvement. As it is, a certain amount of effort is required to make sure that everyone can see what is demonstrated. I pride myself on the fact that if a student does not see any particular thing it is entirely his own fault, as, generally speaking, the rashes are easy to see, and as a rule only good ones are demonstrated. I regret, however, there is always some hanging back on the part of the students, some men being very shy about approaching a bed closely. In a way this is natural, especially if an examination is impending, as an attack of infectious disease may be extremely inconvenient. As a matter of fact the students very seldom take any infection; I have not seen ten cases in twenty years, and I am afraid to say how many men have attended the hospital in that time. If a disease is taken it is usually chickenpox or measles.

The clinical material in a fever hospital varies very much even from day to day. Rashes are very evanescent and are not often useful for clinic purposes for more than two days. The exudation on a diphtheritic throat also tends to disappear quickly. There must always be an element of luck in what each section of the class sees. Some sections appear to be much more fortunate than others, but on the whole the average student sees quite enough. The summer term, during which most men take out the class, usually affords a good supply of infectious diseases and perhaps more variety than the other two terms. In this term, moreover, the class is held in daylight, which is by no means always the case in autumn or spring, when more

than half the clinics are held in artificial light—a difficulty it is impossible to get over, as students cannot get out before 3.45 P.M. The average student sees a lot of scarlet fever, diphtheria and measles, a sufficient amount of erysipelas and cerebro-spinal meningitis, and always one or two cases of enteric fever which are carefully studied. He is also sure of seeing chickenpox, a disease to which I pay great attention in the clinics on account of its value in emphasising the possibilities of missing a case of smallpox. I have always held that chickenpox is insufficiently studied. If its peculiarities are once understood and appreciated the chances of confusing it with smallpox becomes much more remote. We cannot, unfortunately, show smallpox to every student, but we can insure that the disease which resembles it most closely is thoroughly taught.

In addition to these diseases the student is unlucky if he does not see a few examples of mumps, rubella, and whooping-cough. The two latter are usually epidemic in the summer term and are at that season very frequently demonstrated. Every opportunity is, of course, taken to show all important complications which occur in hospital during the period of attendance.

Dr. Fowler at the last meeting of the Club raised the question of the seasonal incidence of disease in children. At the Fever Hospital we are bound to suffer even more in that respect. But I do not think that any practical arrangement could be made to spread the attendances of students over the whole year instead of over three months. It must be remembered, in the first place, that I can never guarantee that on any single day there will be a demonstrable example of the rash of a particular disease, and if, for instance, there were three attendances in the autumn term, it is quite possible that one or more of these days would be blank days as regards the particular disease which attendance at that time of the year was expected to secure. Again, the difficulty of arranging the attendances at long intervals of 250 students might well prove insuperable, and in any case the continuity of instruction gained by regular weekly attendance for three months would be lost without any compensatory advantage.

On the whole, then, I am inclined to hold the view that the instruction given and the opportunities for seeing infectious diseases, under the present arrangements, are reasonably adequate, and that, considering the distance of the hospital from the school, it is impossible to exact more time from the student.

XXXVII.—THE TEACHING OF SURGICAL TUBERCULOSIS.

By JOHN FRASER, F.R.C.S.

One has first to define what one means by the term surgical tuberculosis, and I take it that one may define it as tuberculous disease of the bones, joints, and glands. In introducing the student to these conditions, I believe that the instruction given ought to be largely clinical. A few pathological and lantern demonstrations are essential in order to illustrate to him the pathology of the disease.

Surgical tuberculosis, of course, occupies a considerable portion of the work of a children's hospital, and while in attendance there, the student sees a very large number of cases.

We introduce the subject to him by reminding him of the etiology, and we make every effort to impress upon him the importance of milk as a source of infection. We teach him, as far as we can, the diagnosis of surgical tuberculosis, more especially the diagnosis of tuberculous joints, in which early diagnosis is so important for successful treatment.

A demonstration of X-ray material is arranged, for we find that a very real difficulty which the student has is the reading of an X-ray plate so as to detect the presence of early bone or joint tuberculosis.

In regard to treatment we impress upon him the importance of conservative treatment. We try to illustrate to him the peculiarities of the case in which open operation is best. We give him as complete instruction as we can in the variety of splints which are in use for tuberculosis of the bones and joints.

Such, briefly, is the outline of the scheme which we aim at, but bearing in mind the fact that nine-tenths of our audience will follow general practice, we make it our aim that whatever he has been taught he at least has had instruction, firstly, in the diagnosis of surgical tuberculosis; secondly, in recognising when open operation becomes absolutely necessary; and thirdly, the enormous importance of conservatism as a means of treatment, and I believe that, from the general practitioner's point of view, these are the three essentials of his work as far as surgical tuberculosis is concerned.

We make a point of demonstrating to him a large number of cases representative of every form of the disease, and unfortunately we have no lack of material.

We have found it difficult to advise the student in the use of tuberculin. Our own experience has been disappointing and general opinion on the subject is still very unformed, but we illustrate to him the uses of tuberculin, and we certainly impress him with the fact of its being a very dangerous weapon when used in unskilful hands.

DISCUSSION.

Dr. Norman Walker.—It has struck me as a very interesting feature of these discussions that we have shown at almost all of them the same appreciation of the possibility that we may have been wrong in the past—that our methods were not necessarily perfect. And so now with venereal diseases. It is not so very long ago since inquiries about this were started, and several members of the Club may remember the somewhat complacent satisfaction with which we reported that the teaching of venereal diseases was hardly improvable. We have now come to the conclusion that that is not so—which is the first step to a happier state of things.

The first thing I have noted in connection with Colonel Harrison's paper is the *examination*. The proposition of setting up such an examination in venereal diseases, that a man might possibly be rejected in his final because of it, is one which will not meet with universal assent. I speak from the point of view of a teacher of a subject in which an examination used to take place, but has now been done away with, when I say that I think better than any special examination is the system now in vogue, viz. that the teachers of the special subjects are required to note the student's attendances—to this taking of attendances I attach the utmost importance—to record the work done with him in the cliniques, and to certify as to his reasonable capacity.

Colonel Harrison referred on more than one occasion to the skin. Although, personally, I have no wish to add the teaching of venereal diseases to that of the skin, I am convinced that it is right that the students should be taught the rashes, which are *the* things which are brought to their notice first; for the patient does not, as a rule, expose local lesions. He comes to the doctor hoping that the rash he has is not syphilis, or that, if it is, the doctor will be too polite to say so, and will cure him somehow without asking too many questions. A patient with syphilis may have other diseases, and one constantly sees cases of psoriasis which have been treated as syphilis.

Questions as to the prevalence of venereal disease were asked in our earlier inquiries, and from every quarter there came the answer from general practitioners that they had been for many years in practice and had very rarely seen a case. But the truth is that people go to quacks and chemists, who treat them very inefficiently, and so the evil goes on. One hopes that our efforts in this matter in Edinburgh may help to put suitable legislation into force before very long.

In listening to these various debates, one has been impressed by the fact that everything points to an extension of the curriculum. The five years is little enough, although there are, I know, universities which cut that five years down to fifty-seven months—the shortest permissible period. It would be an improvement if the examinations were clear of the sessions. In his last term the student is almost entirely taken up with examinations, and if this could be changed his last three months would be much more useful to him.

I was interested in Colonel Harrison's remarks about the cliniques for practitioners and the class which had attended them. Surely such cliniques could be combined with some instruction for senior students, with great benefit both to practitioners and students. That involves this question, viz. that we in Edinburgh are too much held down by the tradition of the hospital hour. Teaching there, except for the tutorial classes at night, is

practically confined to the hours between eleven and two. Would some of us not be prepared to give some of our afternoons to this?

Dr. Fleming.—In medicine we are apt to neglect the great importance of syphilis. Speaking as a former pathologist, I am certain that the amount of disease directly due to syphilis is very great. I was struck with Colonel Harrison's remarks on the loss to the community of good thinkers and workers due to improperly treated syphilis, which, though not leaving the patient actively ill, yet impaired his intellect and energies.

Dr. Veitch said that he had seen a fair amount of venereal disease in general practice, but it was seldom that civil patients reported sick to their doctors in the early stages of the disease. This handicaps the practitioner both in diagnosis and in treatment.

Mr. Miles.—Colonel Harrison has convinced us on both sides of his paper, as regards the disease itself and its importance and prevalence, and, what we are perhaps more particularly interested in here to-night, the methods of teaching it.

Within the last ten years the charge of the lock wards in Edinburgh has been taken by junior surgeons in rotation, with great benefit to themselves and to the teaching. We look forward now to increased improvements in this department. The Report of the Royal Commission and the action taken by the Local Government Board on the head of it is going to give us a really well-equipped department and proper means of teaching the subject.

I was glad of Dr. Walker's lead touching the co-ordination of the teaching of dermatology with the teaching of syphilology. We have all through these discussions tried to arrive at some means of co-ordinating the different subjects, and he has thrown out a useful hint in regard to these two subjects

We have an arrangement in this school for issuing a certificate in venereal diseases to students. I understand that every student must present to the Dean a certificate of having attended the course, of having carried out certain investigations of a microscopic kind, and of having given a salvarsan injection, and that, unless he has this certificate, when he qualifies he is not entitled to draw from the Local Government Board supplies of salvarsan and its substitutes free of charge. I think I am right in saying this, but in any case that is a proposal which is to be put into force when the department is established.

Mr. Muir.—Can Colonel Harrison recommend any practical histological method other than the one he mentions, such as the Burri, Levaditi, or Giemsa methods? Because in the first place it is extremely difficult to demonstrate these secretions with the dark-ground method to such large classes as we have to deal with. Again, I quite agree that this method is to be recommended where the investigator can get the fresh secretion from the patient and prepare it for this method; but what about the general practitioner, who may not have the necessary outfit, which costs from £20 to £50? I am certain he would prefer to send such material to a laboratory for report. This, however, can only be done by forwarding microscopical films in the usual way, which are of course unsuitable for the dark-ground method. I think it is important to meet such conditions by some other histological method.

Dr. Clarkson.—I am afraid a great deal of what Colonel Harrison said about general practitioners is true. It is most unfortunate that men who have graduated recently and who have had an amount of training in microscopical work which never fell to our share, never look down a microscope after qualifying and are incapable of staining anything. They find they can get along without it, so take no trouble over it. General practitioners do not see syphilis in the early stages. I was in practice for about twenty years and I saw very little venereal disease: and when I did see it, it was generally in the form of a still-born baby or a well-marked rash. I did not see a primary sore half a dozen times. Nowadays there is a big change in the feeling of the public in this matter. The trend of the times—as evidenced in Brieux's play, *Damaged Goods*—is to awaken their minds to a consideration of the subject and to educate them as to its importance.

Dr. J. S. Fraser asked Colonel Harrison how he would propose to teach venereal disease, especially syphilis, as affecting the special subjects? Should syphilitic affections of the ear, for example, be taught by the ear specialist, or be included in the course on venereal diseases?

Dr. James Miller.—The whole question of microscopic diagnosis comes under the department of pathology and bacteriology. So far as I know, nothing in the nature of this teaching is carried out at present in the venereal course. One thing in which the students do require a great deal of drilling is the method of taking specimens and in interpreting reports.

Sir Robert Philip.—Apart altogether from the Royal Commission and the governmental action immediately following it, we must realise the large part Colonel Harrison himself has played in forcing this question. There is no doubt that it is to Rochester Row that we owe many of the practical developments which are now ensuing. I would like to ask Colonel Harrison to tell us how he runs his course from day to day and from hour to hour—how, if we were a class assembled for the first time, he would propose to lead us through the mazes of his subject.

Professor Lorrain Smith.—I, too, was going to ask Colonel Harrison this. In his paper Colonel Harrison mentions a student attending a course during the winter, and as we have to include in our report practical suggestions as to the teaching of students, I would like to ask Colonel Harrison to go into details as Sir Robert Philip suggests; to tell us the hours and the relative amount of practical laboratory, clinical, and lecture work which the student should be expected to overtake to equip him for the certificate which we propose to grant in this school.

Dr. Traquair.—One of the most important points Colonel Harrison made is, I think, that the public must be educated to regard venereal diseases from a new point of view. This change of attitude can only be brought about by educating the general practitioner, which, again, can only be done by educating the student. In respect to this, I remember a remark made to me by Sir Robert Philip some time ago regarding the attitude of students towards syphilis. In writing up a case they will say the patient *denies* having had venereal disease. That attitude will have to be done away with before any progress can be made. As long as students and practitioners, and, through them, the general public, are allowed to regard venereal diseases in

this way, efficient treatment will be hindered. In the train of this new attitude will come, it is to be hoped, truthfulness of death certificates. Sir William Osler has pointed out the enormous importance of syphilis as a cause of death and the trifling exposure of that importance which is made in the returns of the Registrar-General in Edinburgh.

The amount of syphilis which appears in the Eye Department of the Infirmary seems to me to be relatively very great. I have seen five cases of syphilis in one morning in one ordinary out-patient clinique. I have noticed that students frequently do not seem to be able to recognise an obviously syphilitic individual at a glance—which brings me to the question of examination. It seems to me that, while an examination may be bad if wrongly conducted, surely we should ensure that before a student is registered and sent out to practise amongst the public he should at least have a knowledge of some essentials. It might be stated clearly in a syllabus or otherwise that students will be expected to realise the importance of the diagnosis of syphilis and the importance of its continued treatment. One often sees, in the Eye Department at any rate, that while the disease may be recognised, the importance of *continued* treatment is far from realised; for this the teaching must be largely to blame. There seems to be something radically wrong about the teaching, at least in regard to the results.

Colonel Harrison said in reply.—I should like first to express my great appreciation of the sympathy you have shown with this subject, which I have very much at heart. I came rather expecting to have something to fight, but I find there is very little of the combatant element here to-night.

Dr. Walker rather doubted the use of an examination. I grant that an examination is not everything, but my experience is that the unwilling student may be made keen by the spur of it. I remember in the years before the war—1910-1914—that when we were training R.A.M.C. officers—so-called senior captains—for their promotion course, of those who took up venereal diseases, the majority took it up solely because they felt no inclination to devote themselves to any other subject. It was the spur of the examination at the end of the course which alone kept them to it, so that at last they became thoroughly interested in what they were doing.

With regard to the difficulty of getting the public to report early. That, I think, is probably only a matter of education. We experienced this with the troops quartered in the London district before the war. We set ourselves to educate them as to the value of *early* treatment; and gradually, without any application of the Army Act, we reduced the number of men reporting as late as the secondary stage and increased the number of those reporting in the primary stage, with the result that whereas in about 1910 for one reporting in the primary stage we got two reporting in the late secondary, just before the war we had two primaries reporting to one secondary. I think if practitioners generally were to demonstrate in the same way that it *is* worth while to report early, the movement would spread amongst the general public.

Captain Millar answered Mr. Muir's question in regard to dark-ground illumination and staining as I would answer it. Staining is not to be compared with the dark-ground method. By it we see the living spirochæte: in a well-lit, dark-ground specimen the graduation in lighting of a spirochæte pallida in comparison with others which may resemble it very closely can

most usefully be observed. The other methods are, I think, very liable to lead to errors in diagnosis.

I am asked to go into details as to my course on venereal diseases, which, of course, brings up the question of the relation of the eye and the ear specialist to the venereal specialist. It would help enormously if the eye or ear specialist, recognising a case of syphilitic disease of the eye or the ear, would at once send it to the venereal specialist for demonstration to his students. As regards the details of the course. This is rather a difficult question for me, because I have been more or less living from hand to mouth. I have had to hold courses which I have felt were not nearly so complete as I should have liked; but the line which I go on is this. When the newly-joined class comes to me I start by telling them that I am going to teach them microscopic methods first of all, and I impress upon them not to be afraid of using the microscopes that they will find in every department of the hospital. I urge them to take as many specimens as possible, and to remember that those who are there to instruct are only too glad to do it. As a preliminary to the microscopic work we give them a demonstration on the principles of dark-ground microscopy. So far the work has occupied two or three days. The main part of the teaching is clinical. Some days are spent in the syphilis department, where the teacher sits down and goes through the case systematically from top to toe. We teach the student that he *must* examine every venereal case from top to toe. I refuse absolutely to see a venereal case until he is exposed sufficiently for me to see him in that way. I admit, of course, that with women we could not do this. I like the classes to be rather small. I do not like more than half a dozen round one teacher. As we go along, the students are taking specimens of syphilis and gonorrhœa. With regard to the teaching of the laboratory work more particularly, I think it is of value to the men to learn a little about the maximum of hæmolysis, what complement is, and so on. After about half a dozen or ten sittings in the laboratory they should learn all they need know in order to understand the terms which the pathologist uses. I lay great stress on the interpretation of laboratory reports; this can be done largely in one lecture. Speaking of lectures, I find that twelve or fifteen during the course suffice. The first one, which I give myself, is a complete demonstration of the method of examining a patient (this is emphasised again in the clinical department) and a demonstration in the simple methods of taking specimens. The next lecture is on the interpretation of laboratory reports; what should be done under different circumstances, *e.g.* when the pathologist reports that he has not found spirochætes, when he says that he has found diplococci, which are morphologically indistinguishable from the gonococcus, and so on. Then we start on the treatment of syphilis: we consider each remedy in turn, its side effects and how to combat them, and its general place in the therapy of syphilis, building the whole into a complete course for different periods of syphilis and how the disease is to be modified. This, I think, should occupy perhaps five or six lectures. Next we come to soft chancre and such minor things as balanitis; and finally one ends up with gonorrhœa. Here I aim not at teaching the finer things so much as at giving the men the principles, laying down for them set methods of early treatment and abortion of gonorrhœa. I finish up by impressing upon them what a very difficult thing it is to treat developed venereal disease and what a simple thing it is to abort it. As far as the

university course is concerned, I do not see how the venereal course can be fitted in without it dragging through a winter session. As regards the clinical part, I would set students down definitely to examine cases and draw up a complete diagnosis. Then I would myself examine the case and criticise the notes and findings. I think the student will learn far better by being made to take his own notes. Lastly, in the course which I hold at Rochester Row, every Tuesday evening I get the medical officers in that hospital to meet together to discuss their interesting cases, and I get everybody who is attending for instruction to come and listen and learn.

XXXVIII.—THE SCHOOL EDUCATION OF GIRL CANDIDATES FOR THE PROFESSION OF MEDICINE.

By Miss BENTINCK SMITH, St. Leonards, St. Andrews.

I TAKE it that the task you have set me this evening is to give you my views as to the best education at school for girls who intend to take up medicine as a profession.

The question may seem to resolve itself into two alternatives: Shall a girl specialise at school with a view to taking up medicine, or, in other words, shall her education be primarily scientific? or shall the girl, who is in the future to be a doctor, not specialise in science any more than in any other subject, *i.e.* shall her education be of the more or less usual literary type, whether on traditional or modern lines, with the admixture of elementary science, which I suppose we here are all agreed in considering essential in any course of study that claims to be educational at all? I am excluding for the purpose of this discussion elementary education up to the age of, say, thirteen.

My task would be simple if the answer to either of these alternatives could be Yes or No; but, in my opinion, that is not possible. The woman doctor is after all a woman first and a doctor afterwards, and if we are to turn out good women doctors we have first of all to secure good women, *i.e.* competent, fully developed human beings equipped with the qualities we consider characteristically desirable in a woman as an individual and as a member of society; and, secondly (but only in the second place), we have to train these women in the art of the practice of medicine. To act otherwise would be to imply that the professional training for medicine was in itself the best educational training, taking education in its widest sense. But I doubt that any even of the present audience, which, I suppose, is largely medical and scientific, would go that length.

Professional education, so-called vocational training, is, in my opinion, out of place at school, and early specialisation with a view to rapid and early success in a profession will defeat its own end, no matter what the profession may be, but it will be specially disastrous in medicine. Up to the age of sixteen the education of the girl who

aspires to medicine should not differ from that of any other girl. Both should study at least a modicum of the exact sciences—mathematics, elementary physics, and chemistry—but both should also have a fair chance of becoming familiar with more than one literature, which means more than one language in addition to their own. Both should get some knowledge of history and of the historic method, and both should be practised in the power of self-expression, whether in letters, in music, in art in the narrower sense, or in movement, say, games or dancing. In short, a human being to be called educated must have been taught to think and to appreciate thought, and be, or have become, accessible to æsthetic emotions, and capable of a certain degree of creative activity by means of the practice of some art. If that be true of human beings in general, it must, since the greater includes the less, be also true of the would-be doctor. Too early a devotion to specialised knowledge must limit the time that can be spared for general education, for not even a modern time-table can hold every subject. After sixteen it may be, and often is, possible to specialise in school to a certain extent, and a girl who has a strong bent for science may safely devote, and should be given a chance of devoting, one-third to one-half of her working time to science, but not more. On the other hand, a girl who is destined to read for honours in classics or history should equally devote some portion of her time to science.

The point I want to make is this. It is all-important in the interests of women and of the medical profession that only the well-educated woman should aspire to medicine. If you devote too much of a girl's time at school to the acquisition of scientific information, even if it be acquired by the most up-to-date experimental methods, you limit the chances of wider cultivation, and, personally, I would rather a girl plunged comparatively ignorant of science into the study of medicine than comparatively uneducated in the wider sense.

Several very obvious objections will be made to this statement. First, that time is a matter of great importance, for, literally, time means money, and if a girl who wants to take up medicine leaves school without a specialised knowledge in certain departments of science, she will have to add a year to her professional studies in order to atone for her scientific ignorance — a serious drawback in the case of poorer students; secondly, that at the medical schools and at the universities examinations for scholarships and bursaries presuppose a considerable amount of specialisation in science, and the girl educated on the lines I am assuming would therefore be debarred from these benefits; thirdly, a point to be resented by the true scientist, my argument may be held to deny the educational value of science.

I agree that the question of time and money constitutes a real difficulty, but one that ought to be met by the willingness of univer-

sity examination authorities to value evidence of intellectual promise above information, and general, above specialised, knowledge. The present standard of University Entrance Scholarship papers puts a premium on cram at school—even science can be crammed—and induces in the aspirant to a scholarship a state of mind which we familiarly, and not inaptly, call "staleness." Schools, especially girls' schools, have, I know, tried to put pressure on the universities and colleges to alter their methods for the award of scholarships—so far without success. The question of money ought not, however, to be allowed to exercise an adverse influence on education, and perhaps as the nation, including educational authorities, becomes more enlightened it will cease to do so.

I am armed against attack on the third point by the Report of the Committee on the Position of Natural Science in Education, which you have all probably read with much interest and profit. Even the signatories to that Report, who may be taken to represent the most advanced scientific opinions in the country, do not claim more than a modicum of a pupil's time for science, rightly recognising that in a truly liberal education science must share the honour of a place with other subjects. "Some of the advocates of scientific training"—I quote from the Report—"have damaged their cause by claiming too much for their subject, and by seeming to depreciate the value of the literary studies which had tended to monopolise the attention of the ablest pupil. . . . We do not think that the surest method of victory is to be found in the overstatement of the merits of science, or the depreciation of the value of classics. . . . We are confident that the teaching of science must be vivified by a development of its human interest side by side with its material and mechanical aspects, and that while it should be valued as the bringer of prosperity and power to the individual or the nation, it must never be divorced from those literary and historical studies which touch most naturally the heart and the hopes of mankind." Nobody here doubts the educational value of a study of science. We are agreed, to quote once more from the Report, that: "It can arouse and satisfy the element of wonder in our nature. That as an intellectual exercise it disciplines our powers of mind. . . . That it quickens and cultivates directly the faculty of observation. That it teaches the learner to reason from facts which come under his own notice. That by it the power of rapid and accurate generalisation is strengthened. That without it there is a real danger of the mental habit of method and arrangement never being acquired. . . . That in the science lessons the eye and the judgment are always being called upon for an effort, and because the result is within the vision and appreciation of the learner, he is encouraged as he seldom can be when he is dealing with literature. . . ." All this we may grant, and yet I repeat that if a girl who aspires to medicine

has, in her school career, to choose between a liberal education in which, for various reasons, science can play little or no part, and one which, in spite of the opportunities offered for the acquisition of a considerable amount of scientific knowledge, is less liberal, she will be well advised to choose the former. She can make up for lack of early scientific training, but she can probably never make up for lack of early literary and æsthetic training. Luckily, in an increasing number of cases, girls are not confronted with this Hobson's choice, and most of the schools from which the women doctors of the future will be recruited provide normally for the study of English, including history and geography, languages other than English, mathematics, and natural science, and each of these subjects is considered an integral part of a girl's education.

If we were living in Utopia, I would like to emphasise two other points.

The first is this: In most trades or professions in which women, rather recently, have entered into serious competition with men, it is a fact that in order to establish her claim to equality of opportunity and treatment with men the woman has, in the first instance, had to prove her superiority. In many cases we have resented this necessity as weighing unfairly on the woman. In the interests of the medical profession and of the individual woman doctor, I hope the necessity for relative superiority in the woman will survive. My great anxiety at the moment is lest too many intellectually and morally mediocre women should crowd into medicine. The large number of well-paid medical posts that have of late sprung up, the scarcity of men doctors, the social limitations in other professions open to women, such as teaching, are all contributing causes to a growth in the number of women candidates for medicine. The number of women thronging into medicine just now fills me with some anxiety, and I regret that the relatively lower standard of the matriculation examinations for medical students, in London and also in Scotland, encourages the girl, who has difficulty in reaching a high standard in several school subjects simultaneously, to qualify for admission as a medical student. The abolition of compulsory Latin for medical students in the northern universities is, on the whole, to be deplored. The Scottish universities accept both Latin and mathematics on the lower standard for medical students. The General Medical Council accept for registration purposes qualifying examinations which do not include Latin. I hold no special brief for Latin, but I know from experience as a teacher that the girl who does not include Latin amongst her qualifying subjects fails to do so because she was unable to keep up with her Latin divisions at school, not because she was an adept in some other language; her French is, as a rule, equally to seek. The woman doctor, if she is to justify her existence, should be something of a

philosopher and a woman of the world, but she will be neither if, after a somewhat exclusively scientific education at school, she rushes through a university medical course, as rapidly as may be, and begins to practise with the least amount of delay. The average man practitioner of fair medical skill is frequently deficient both in knowledge of the mind and in knowledge of life. What is a serious defect in him becomes yet more fatal in a woman, and with our increasing perception of the inter-relation of mind and body and the reaction of social conditions on individual and public health, it is a reprehensible shortcoming to acquiesce in such conditions. I would like every woman aspirant to medicine to have some quite definite training in philosophy, more especially psychology, and in social science before she is launched in practice. The mere exercise of her profession will teach her much, of course, but she should not have to rely for these two important factors in her life's work on mere empiricism. This suggestion adds, I suppose, quite considerably to the length of the medical course. It would be facilitated, however, by an education at school which was really liberal, and it is hampered by one which is too exclusively scientific in the narrower sense. Any shortage in the acquisition of scientific *information* at school can be compensated for to some extent by the employment of scientific *method* in other studies, as the Report on the Position of Natural Sciences in Education has so ably pointed out.

To supplement my remarks, I have made a rough sketch of the work in science which it is possible for girls who are aiming at qualifying for medicine to accomplish in four years at a school like St. Leonards, which has up-to-date laboratory accommodation and an experienced teaching staff. The standard ultimately attainable is that of admission to a degree course at a university. We consider further that the science work as planned leaves a sufficient margin of time for general education to proceed concurrently with it. The main point to be noticed is that up to the age of the first school examination—about sixteen—we should not differentiate between medical students and girls proceeding to other professions. Much that I have wanted to say has been anticipated by the publication of the Committee's Report. I may add that a school like St. Leonards would be both able and willing to prepare girls while at school for their First Professional Examination. The practical drawback would be that the small number of candidates for such a course would make it expensive in labour and money.

Summary.

1. Girls should begin physical science at thirteen years.

2. Schools with adequate laboratory accommodation can easily undertake the practical work up to the standard of the university courses.

3. Girls should not attempt to specialise in science until they have reached a recognised standard of general education, including a course of physics and chemistry—for example, that required by the O. and C. Schools Certificate. This standard should be attained during the sixteenth year.

4. Girls should specialise in science during the last two years of school life, *i.e.* during their seventeenth and eighteenth years.

5. Girls proposing to study medicine should attend most of the same lessons as those who intend to obtain a degree in natural science, and have, in addition, some extra work in biology.

[Miss Bentinck Smith submitted a scheme of work showing how the school curriculum could be adapted to provide the required scientific foundation for intending students of medicine.]

XXXIX.—THE RELATION OF SCHOOL EDUCATION TO THE STUDY OF MEDICINE.

By J. ALISON, M.A., Headmaster, George Watson's College, Edinburgh.

You are engaged, I believe, in the consideration of the whole course of training for the medical profession with a view to suggesting improvements in it; and the particular part of the course now engaging your attention is the preliminary portion, including the school training and the work for the First Professional Examination. I take it as a great honour to be asked to contribute to your discussion. The subject appeals very strongly to me as headmaster of a school which supplies many recruits to your profession, and I am pleased to have the opportunity to put before you opinions which are the fruit of a somewhat long experience.

The first topic to which I would direct attention is the standard of the Medical Preliminary Examination.

1. The General Medical Council enrol as students boys who pass an examination on what is known in Scotland as the Intermediate Certificate Standard, and this standard is accepted by the Scottish universities as adequate for entrance on a course for a degree in medicine. For graduating courses in any other Faculty the higher entrance standard of the leaving certificate is demanded, a certificate which may be granted only after two years' further attendance at school. The conditions laid down by the Carnegie Trust for payment of medical fees and the general raising of the school age in Scotland have tended to increase the number of boys who enter the medical course with this higher qualification. It is said that about 60 per cent. of the enrolments under the General Medical Council are on the higher standard; but I believe that of the students who entered Edinburgh

University this session the number who had reached the higher standard formed a much smaller percentage. There does not seem to be any apparent reason why your profession should stand alone in admitting even 40 per cent. of its entrants on a lower standard than that demanded by other professions. I should suggest that this Club use its great influence to induce the new Entrance Board, when established, to demand the leaving certificate or its equivalent from every candidate for admission to the Faculty of Medicine.

2. In the second place, I note that in the Medical Preliminary Examination science has no place in the list of subjects. The omission is at first sight rather startling. The explanation, of course, is that when the subjects of examination were chosen science was not yet established as a school subject. It has in sad truth taken the universities and the Medical Council a long time to find out what the schools are doing, and I fear that even yet the universities do not fully realise how powerful their influence is, either in helping or hindering the development of the schools. Had we even had the option of offering science as a preliminary subject for the last twenty years science would have established itself more easily in the schools; at any rate, it could not now have been said, as it can with truth be said to-day, that the planting and nurture of science in the Secondary Schools of Scotland is due to the much-decried Scotch Education Department alone and not at all to the mothers of learning—the universities.

Things have, however, moved a little, and in 1915 science was admitted as a subject in the Arts Bursary Examinations. That already has given a strong impetus to the study of science in the schools. After the Arts Faculty has thus conceded the claims of science to compete with other subjects, the Medical Faculty cannot any longer afford to ignore in its examinations, and thus to discourage in school work, a subject so vital and so fundamental to its studies and methods.

Having touched on the standard of the Preliminary Examination and on its subjects, I wish to submit another point which has often occurred to me. It concerns not the scientific side of the medical man's education but that broader culture which every university graduate should carry out into the world with him.

Thirty years ago it was quite common for the clever lads to leave school at sixteen or seventeen, to take an arts course and then proceed to medicine. But now that the school age is more generally extended to about eighteen there is not time for such a long course of liberal education, if a man is to be fully equipped for his life work by the age of twenty-five or twenty-six years. The loss in some directions is more apparent than real. In Latin and mathematics, for instance, the Higher Leaving Certificate papers to-day are fully as difficult as the degree papers in these subjects in the old days, and our pupils as

competent in these subjects as the M.A. of that time. But in one direction I see manifest loss and imperfection. Every well-educated man, it seems to me, should have some introduction to the problems of philosophy; should know something of scientific theory and method; of what thinkers have written on the world and our place in it; on the ultimate nature of reality; of good and evil, happiness and duty. He should, in short, have a living conception of man as a moral and thinking being. Now, as things are, boys entering straightway on their professional career may and do miss this department of study, and that loss from the spiritual point of view is tremendous. These subjects are beyond the grasp of schoolboys, but the arts man under the old regulations got a wholesome and often drastic introduction to the subject in the philosophy classes. I do not at the moment see how and when the young medical can be brought into touch with these great themes, but I venture to press the matter on your attention, assured that you too recognise that to an adequate conception of the true scope of your great profession in dealing with humanity there goes an understanding of its moral as well as its physical needs.

I now turn to discuss how by a closer co-ordination of the work of school and medical school some lightening of the undoubtedly overweighted medical curriculum may be effected. Dealing first with the students who enter on the lower standard, I have to say at once that none of the work they have at that stage overtaken can be regarded as equivalent to the work for the First Professional Examination. For the student who enters medicine on the Intermediate Certificate standard, university classes preparing for the First Professional will thus continue to be an urgent necessity. But as regards students on the higher standard the matter requires more extended consideration, and in order that you may clearly understand the educational work the schools actually overtake I shall give in outline the curriculum of a boy from twelve years of age, with particular attention to his training in science. There may be slight variations in different schools, but I fancy the curriculum at Watson's is fairly typical.

Boys come into the Secondary School in Class I. at or if possible a few months before twelve years of age. They pursue what we call the Intermediate Course of study for four years. This includes English, mathematics, science, drawing, and one or two languages other than English. The work in science is continued regularly for three hours a week and covers a course of elementary physics and chemistry. Neither in the time-table of science for any one year nor in the sequence of the entire instruction in science at this stage are these subjects dissociated from each other. For example, the chemistry of air and water is studied after the physical properties of these substances have been experimentally investigated. The time allocated to labora-

tory work is about twice as much as is devoted to teaching by demonstration, but the masters are not bound by any hard and fast rule in this respect. The course comprises the study and measurement of the more important properties of matter in its three states, such as mass and density, the gas laws, elementary statics and hydrostatics, heat, the chemistry of the elements and their principal compounds found in air, water, chalk, and salt, with quantitative work designed to lead up to the laws of chemical combination and their expression in the chemical equation.

In the first year of the Post-Intermediate Course—*i.e.* in Class V.—the systematic and experimental study of dynamics is begun and is continued throughout the course, embracing that part of the subject up to and including harmonic motion and the elementary dynamics of rigid bodies. The chemistry is continued both in theory and practice to cover in this year the preparation and properties of other important compounds of the non-metallic elements already dealt with, and in addition those of sulphur, phosphorus, bromine, and iodine. The time given in the week is six periods of forty-five minutes, and this time is shared equally between dynamics and chemistry.

When the boys reach the second year of the Post-Intermediate Course—*i.e.* when they enter Class VI.—they are allowed for the first time to specialise and may select one of three courses in which classics, modern languages, or science forms the predominating feature. In this year they are expected to present themselves as candidates for the Higher Leaving Certificate in four of the subjects of their course.

The time allocated to science is now increased to eleven periods per week, and is divided thus: four periods to chemistry, five to electricity, and two to dynamics. The physics is extended to include a complete course of practical magnetism and current electricity in the first two terms, rounded off in the third term by a series of demonstration lectures on the application of the laws of induction to such instruments as the dynamo, motor, induction-coil, and telephone. The laboratory course in the third term is almost entirely confined to the investigation of the laws of optics.

Chemistry is continued in theory and practice in the first two terms dealt with. In the laboratory during the first two terms the work includes the analysis of simple salts, the quantitative methods of volumetric analysis, involving those of standard solutions of acid and alkali, while in the third term an introduction is given to organic chemistry by lectures and laboratory work.

In the third year of the Post-Intermediate Course the science boys go on to more advanced quantitative analysis, both gravimetric and volumetric, and to the further study of organic compounds. The work in electricity and optics is continued, and a beginning is made of the study of wave motion as exemplified in the propagation of sound.

I should point out that the more advanced science work that is now done in schools does not prevent the boys from receiving a broad general education. The boys who specialise most in science in Watson's still give weekly six periods to the study of English literature, nine to mathematics, and nine to the study of foreign languages. We endeavour to give every boy who is likely to follow a scientific career the ability to read French and German.

In the Post-Intermediate Course as I have outlined it you will see we approximate to the standard of the First Professional Examination in physics and chemistry. If we do not quite reach that standard there is no doubt in my mind that we could by slightly intensified work do so. Botany and zoology we do not profess to teach, though many of the boys, through the agency of the School Field Club, develop a healthy if somewhat partial interest in these subjects. In my opinion a boy passing out from a recognised school, who has satisfactorily completed a course of science such as I have sketched, might reasonably be given the right on entering the Medical School to sit forthwith the examination in the relative subject of the First Professional, and, if found competent, be allowed to proceed forthwith to the study of more strictly medical subjects.

XL.—THE SCHOOL CURRICULUM OF BOYS WHO INTEND TO BECOME MEDICAL STUDENTS.

By C. STAGG, M.A., Merchiston Castle.

THE discussion of the best curriculum for a boy who wishes to become a medical student would be a simple matter if one could define a typical case, but with the low standard of Entrance Examination there is a wide difference in the capacity of boys who gain admission to the university. There are the boys of good or average ability who go through the school course with credit, and who probably give no trouble at the university, and there are those who, without being able to make their way up the school, and without being able to read or write, can pass the Preliminary Examination.

I shall take the age of thirteen as a starting-point, because it is the age at which they are considered able to begin a course of physical science as distinct from Nature study.

It is desirable that from the age of thirteen to sixteen a boy should learn as many subjects as the time-table and his abilities permit, partly in order that he may find his own level and partly in order that he may discover where his sympathies lie. If, for the sake of simplicity, we disregard the time which may have to be deducted for Bible teaching, drawing, music, or Swedish drill, and assume that there are

thirty periods available during the week, every boy at the age of thirteen can devote six periods a week to five subjects. And those subjects will be English, French, Latin, Mathematics, and Science.

At the age of sixteen a rearrangement may be made. For those who hope to do well in medicine, a knowledge of German is valuable, and during their last two years at school they should take German instead of Latin. They may continue the study of the other four subjects, or, if considered sufficiently developed, may begin a partial course of specialisation.

I have assumed that boys will stay at school until they are eighteen, though there is considerable divergence of opinion as to the age at which they should leave. It is not desirable that they should stay too long, especially if they are going to the university, but there is a danger that for one reason or another they may leave before they are fit to take advantage of the teaching which a university can provide. One sympathises with the attitude of a boy who wishes to begin his medical course as soon as possible in order to save time, but his intellectual development, his general outlook on life, must suffer by a premature entrance upon a highly specialised form of training. University classes must also suffer if the standard has to be lowered for the benefit of the unfit. Few boys are sufficiently developed to begin their university course until they are eighteen years of age, and, from the schoolmaster's point of view, one may say that the best time for a boy to go to the university is at the age of eighteen or eighteen and a half.

Those who stay at school until they are eighteen, and have sufficient ability, are taught mechanics, electricity, and magnetism, in the ordinary curriculum. In order to find time for a course on light and sound, they would have to drop French in the last year, and devote the time to science. All the chemistry and physics required for the First Professional could be taught at school without derangement of the existing routine, and without prejudice to a boy's general education. But I am disposed to think that the schools could not successfully undertake the teaching of biology. The supply of men able to teach zoology up to the required standard is limited, and the results would probably prove so erratic that the work would have to be done all over again.

Nor is it likely that the schools could successfully deal with the application of the preliminary sciences to medical problems. Such subjects must be left in the hands of experts.

Teaching by the method of observation is a thing to be aimed at, but when there are twenty boys in a class, they cannot be taught solely in this way.

It would be quite feasible to have a special medical class at the top of the school. There is in many schools an army class, not because

the boys are going into the army, but because the Entrance Examination is on lines which do not correspond with the ordinary school curriculum, and candidates require special coaching in certain subjects. There would also be a medical class, if the university was prepared to give some privileges to boys who had reached a sufficient standard at school, and to formulate a definite scheme of what that standard should be. I believe that very good results would follow if some scheme of this kind were introduced, but it would only affect boys of good or average ability. Those of poor ability would not qualify for admission to the class.

Under existing circumstances the majority of those who are going in for medicine do not exhaust the school curriculum; on the contrary, they tend to leave before they are considered fit to begin even a partial course of specialisation at school, and they are encouraged to do so by a very low standard of Entrance Examination. When a doctor sets up for himself in private practice, he does very responsible work without any check or supervision, and without any necessity of keeping up to date. In view of the very wide powers which are placed in his hands, I have often wondered why it is that at some universities medical students are not required to give the same proof of mental attainment as other candidates for admission. One can only say that a lower standard than that required for medical students cannot be conceived, and that a smart boy could pass the examination at a time when he comes out of a preparatory school.

The schools are almost helpless in dealing with the backward boy who has been neglected in his early youth, and who has not known civilising influences at the mother's knee. They cannot make up for the years that are lost. The best thing they can do is to give the boy some sound advice in order to divert him to another career; but, if the advice is disregarded, they can only submit him without comment for the consideration of the examiners, or advise that he should be sent to a crammer.

To be too ambitious in raising the standard of the Entrance Examination would defeat its own object by sacrificing still more boys to the crammer, but a higher standard in English subjects, at any rate, might be required without danger.

I notice that the points under discussion are mainly connected with the teaching of science in schools, but my own view is that, in the case of a boy who is going in for medicine, the chief difficulty lies, not in science, but in literature. Such a boy probably has a scientific mind. At any rate, he chooses to become a doctor because he finds the subject less uncongenial than others, and, for this reason, he will make as much progress as his abilities permit. The difficulty is to teach him to read and write; that is, to give him the power of

receiving ideas and expressing ideas in order that he may derive full benefit from the science teaching.

I do not wish to raise the controversy about the respective merits of a scientific and a literary training. No doubt the controversy was necessary for the overthrow of traditional methods, but now it only does harm. The literary boy is encouraged to scoff at the laboratory as a place of authorised relaxation during school hours, while the boy who is fond of science is encouraged to look upon an interest in literature as a mild form of insanity. The time has now come when science and literature should regard one another not as rivals but as allies.

Criticism has hastened a complete change in the teaching of literature. In the old days, books were treated as a mine of grammatical peculiarities, and as an excuse for elaborate annotation; now they are taught primarily as reading matter. There is a growing determination to cut off all dead stuff, and to bring boys into immediate contact with the life and inspiration which are to be found in literature, whether Greek, or Latin, or English.

Science has at the moment a great opportunity before her. Much has no doubt been done to improve methods of teaching, but I venture to suggest that there is need of still further reform. The laboratory has its own tables of irregular verbs. Too much time is spent in petty wranglings over weights and measurements, in the worship of formulæ, and in the raking over of dead bones. One would like to see science at school taught on broader lines, with only the minimum of time devoted to routine work. The universal passion for routine, the demand for accuracy and thoroughness in every branch of every subject, is one of the most dangerous enemies to be faced. It destroys all true teaching, even if it does not breed a positive distaste for every form of learning.

We profess to believe that life can only come from life, but we do little to stay the progress of the machine which threatens us from every side. If we are to turn out men, and not machines, we must cut off all dead matter and bring boys into contact with a living force in all the subjects they learn. I do not wish to teach them less science, or to damage their science; I wish to improve their science by increasing their powers of receiving ideas and of expressing ideas. Our aim must be to send out, not machines but men with well-balanced, receptive minds, capable of deriving the fullest advantage from the teaching which a university can give, and capable of taking a generous view of life

XLI.—SCIENCE TEACHING IN SECONDARY SCHOOLS, ESPECIALLY IN RELATION TO THE PRELIMINARY SCIENTIFIC SUBJECTS OF THE MEDICAL CURRICULUM.

By M. M'CALLUM FAIRGRIEVE, M.A.

In these days of stress, when the foundations of all things are being shaken, and new standards of values are being reached, it is good to take all opportunities possible of examining the working of the institutions with which one is acquainted, and of seeing in what points criticisms on them are just, and our ways require amending, and in what points these are unjust, and that duty recoils upon our critics.

I welcome, therefore, the opportunity given by the invitation of the Pathological Club, and thank the good-natured kindness of my fellow teachers of science in Secondary Schools in Edinburgh for the privilege of representing their point of view of the relation of science teaching in schools to the first stages of university medical education. I am aware that, for various reasons, I am likely to do this very imperfectly; in these days one's various activities leave little time for the proper presentation of a case at such short notice; also it is inevitable that a man will speak from the limited horizon of the special circumstances of one school or class of school; but I have had the advantage of hearing the point of view of my fellow teachers put fully in a recent meeting, and I will try to give the sense of that gathering as completely as I can, coloured, distorted, and refracted as it must be by its passage through my mind. To keep up the metaphor, I am afraid that there may be a number of absorption bands in my presentation; but that will matter less, as other science masters may have a chance later of pointing out these omissions.

First, then, we desire to thank the Pathological Club for its kindness in inviting us to be present to-night. We welcome this sign of the awakened interest of the university in the work of the school, and are glad of an opportunity given us of coming more into touch with other educational associations—a thing which is perhaps one of the crying necessities of the teaching profession. From the questions asked us we feel that it is not only we who may derive benefit, and we are anxious that any suggestions we make should be considered as intended to be useful.

From information that we have been able to glean from diverse sources, I gather that it may be as well in answering the questions of the Pathological Club (*a*) to consider, first and briefly, what the schools are actually doing at present in science work; then (*b*) to

consider any alterations and improvements which may be possible in the immediate future; then, (*c*) having seen upon what foundations it is possible for the university to build, to suggest certain reforms in the medical curriculum which we consider desirable, and (*d*) to define the respective spheres of influence of the school and university which are desirable in view of economy of time and effort.

(*a*) On the whole, schools in Scotland may be divided for the present purpose into two classes—those in which science is taught from an early age, and those where it begins at a much later age, perhaps averaging twelve or fourteen years.

In schools of the first type, the first science teaching consists of nature study, and there is general agreement that this early stage of science teaching in the case of young boys and girls is best not a systematic course of any one of the sciences, but is of an observational character with a pervading biological trend. Such physical science as is wise to give to children up to the age of ten or eleven is best of the nature of practical mathematics or measurements, though the physical sciences are not altogether excluded.

Then, generally, from the age of eleven or twelve up to that of fifteen or sixteen, there is a general course of physics or chemistry, not always of a very broad character, but one in which scientific methods are generally well instilled. Different schools differ largely in methods adopted; but the course is largely a laboratory one and is often of a heuristic character, where the help given by the master in solving questions raised by himself or the boys in the course of their work is intended to be as little obvious as possible, and the theory of the process is that boys are shepherded, rather than driven, into the right path. The process requires a very able man to make it thoroughly successful.

If science is studied intensively after this, the standard reached may be very good indeed, and is so in some schools.

In the second type of school this course is greatly modified. Young boys are supposed to be fit for the study of a couple of languages before they are capable of science work, and it may be said that little or no science is taught till the age of thirteen or fourteen is reached, and then an inadequate time is allowed. In consequence, the courses given under these conditions are often very different from those of the first class of school, and while practical work is by no means neglected, heuristic methods cannot with advantage find the same place, or, if they are adopted, the ground covered is small.

But while much that with advantage could be taught earlier is thus postponed to a too late stage, and while a high standard of attainment is not reached by anyone who leaves such a school early, a quite reasonable standard of physics and chemistry may be attained by capable boys who pass through the full school courses.

In neither class of school is it characteristic that botany and zoology is studied to a high standard, if at all.

From what I have said it will be apparent that if a boy leaves school at an early age—say sixteen—then, unless he has been at a school where a regular course of five or six hours a week for science is in operation, he will probably be quite unable to take the First Professional from school. On the other hand, if he stays till eighteen, he might very well be expected to attain to the standard observed in physics and chemistry; and, indeed, it may be that some schools approximate to this standard at an earlier age.

(*b*) This is what is accomplished at present, and if certain of our ultra classical friends are to be believed, especially those whose mental horizon has been just a little clouded by their own early upbringing, the present arrangement is the best possible education that can be devised.

But it is only within the last few weeks that there have been published two reports of great interest to education and which an inveterate optimism makes me hope may bring about some changes much overdue.

Some points specifically affecting the teaching of medical students I shall have to refer to later, but I should like here to call attention to two or three proposals which seem to bear the seeds of great improvement in the scientific education of boys at the second type of school especially, though some suggestions should also be of use in the case of the first type.

The Science Commission (Paragraph 31) propose that for the four years twelve to sixteen not less than four periods per week should be given to science in the first year, and six periods in each of the succeeding years *for all boys*. They propose (Paragraphs 43b and 47) that not all this time should be devoted to practical work in the laboratory, but that some of it should be devoted to demonstration lessons on those parts of the sciences which cannot suitably be taken in the laboratory, as they are satisfied that "The spirit of inquiry should run through the whole of the science work and everything should be done to encourage it; but it seems clear that the heuristic method can never be the main method by which the pupil acquires scientific training and knowledge." They also lay stress (Paragraph 56) on the teaching of English by the science master.

The source of the time necessary for this change in Public Schools' curriculum is the greatest difficulty facing a headmaster, but the most likely solution is indicated by the Modern Language Commission (Paragraph 130). "It is a matter of constant but ineffective complaint that 'the curriculum is overcrowded.' If the curriculum is overcrowded, too many subjects must be taught, or too much time must be given to some of them. Can it be alleged that too much skilled attention is given in

our Public Schools to History, Geography, Mathematics, or Science? We fancy not. Then it may be that too many languages are taught to the majority." Again (Paragraph 133): "It is probable that the Science Committee will recommend that more time should be given to the teaching of science, especially during the years when the basis of a general education is being laid. . . . We know of no means by which time could be better saved than by a more discriminating use of the hours devoted to languages at school, so that whether a boy learns modern languages or ancient languages or both, each individual should only learn so many as he can hope to bring to a worthy measure of fruition." And (Paragraph 106): "If our principles are accepted, if no pupil goes on to a second language till he shows a good prospect of mastering the first, if no pupil goes on to a third language till he shows like prospect of mastering the second, if no pupil learns three or four languages save those exceptional few who can with profit study more than two languages at school, then the time-table will be less crowded than it is at present."

Briefly, then, the suggestions which I think of greatest importance are these: that science should be studied *by all boys* from twelve to sixteen for five or six hours per week; that part of this time might be obtained at the expense of languages, of which during this stage two at most should be attempted by the better boys, and only one by those not linguistically gifted, and I offer no opinion as to which language or languages should be studied; the use of some of this extra time in the acquisition of scientific ideas of general interest; and the constant use of some of the laboratory period for instruction in English as well as science, by the science master.

The adoption of these principles would have a good effect upon all the pupils of most Public Schools to a greater or less extent, and not least upon those destined for the medical profession. The recurring annoyance of the transference of a boy, capable, but quite untrained, from the classical side of the school to the modern side would be avoided. This transference, by the way, throws some light upon the statement one sometimes meets of professors who prefer boys trained on the classical side to those trained on the modern side, because, say they, classical boys do better work later, even if they are slow at first. I can quite believe it. "For of figs men do not gather thorns, nor of a grape vine gather they brambles." Few of those who develop linguistic gifts early in life are at present likely to escape the meshes of the classical net, and a large proportion with linguistic gifts have often other talents as well. In view of other criticism, may I also suggest in passing that even with regard to the brambles that we send up to the university, it is possible that some of them are beginning to show signs of becoming garden varieties before they leave us, and others have been none the worse of a little preliminary cultivation. To guard against

misapprehension, may I say further that I am not criticising the giving of a classical education to a future medical, but I am criticising the postponement of his quite necessary scientific training till too late a stage.

With the courses that might be arranged under this larger allowance of school time, it may be possible in the ages between twelve and sixteen to cover a greater proportion of the syllabus of the physical sciences for the First Professional. This could not be done if we stick to the method of independent observation in practical work; but remembering that our school courses are the only science instruction that boys destined for many other professions are likely to have in their lives, it must be evident that, besides covering instruction in scientific method, such courses should cover the broad outlines of scientific knowledge that should be possessed by every educated man; and it is here, I think, as we approach the higher age, that we may borrow a little from university methods, adapting them to our own requirements. Some portions of these new courses must be done thoroughly, and their mathematical and linguistic possibilities must be fully developed; others must be done chiefly from the point of view of science training in observation and deduction; other fundamental scientific ideas must be filled in by demonstration as completely as the time-table allows; also opportunities for constant revision are desirable till the ideas are part of the mental equipment of the boy, when it will not so much matter if he forgets the *facts* in later years. Courses which are entirely satisfactory from all points of view are still fluid and have not yet crystallised, and some experimenting is required on the part of the teacher.

In the last years of a boy's course at school he should be allowed to specialise, though his general education in language and mathematics should by no means be stopped. If sufficient time were allowed it *might* be possible to cover some ground even in the biological sciences; upon the extent of our effective occupation of this ground we prefer, however, not to dogmatise, as our present experience of teaching the biological sciences is so limited.

(*c*) We have thus been led to the question of the content and character of the First Professional curriculum. Here we schoolmasters have a rather different point of view from that which seems to be suggested in the letter sent out by the Pathological Club. The view is more clearly indicated in the Science Committee's Report. Thus it is stated that in the Faculty of Medicine at Edinburgh (Paragraph 160): "The general feeling is against the recognition of such (school) courses of instruction as exempting from courses in the preliminary scientific subjects in the Faculty of Medicine"; and the Faculty of Medicine at Glasgow puts it even more plainly. They say that "it is not within their knowledge that any Secondary School did, or could, under any circumstances, teach scientific subjects of the scope or up to the standard required for the First

Professional Examination in Medicine"—a fairly comprehensive statement, but one which gives point to the feeling expressed strongly at our meeting, that we would very greatly welcome action by the universities to make themselves acquainted with what was being accomplished in schools at the present time. If they care to visit us we will be pleased to show our laboratories, some of which are palatial, others are still quite inadequate in accommodation but have prospect of improvement in this respect; we will be pleased to discuss our courses and generally explain what is being done. We hope to show them that this is often quite good and sound work, for we naturally tend to agree rather with the Science Commission and Sir Edward Schäfer than with the rest of the Medical Faculty. "In some subjects the instruction in Secondary Schools is far more thorough than in the relatively short courses which are all that a medical student has time to attend at the University." "We feel," continues the Report, "that the time which can be given to the basic sciences in the course of one year is quite insufficient unless the students have some considerable knowledge to start with; if they have such knowledge, the universities should give them credit for it; no student should be required to mark time because others know less."

That is quite the position of the science teachers in this matter.

Indeed it is difficult for us to get the point of view of the Faculties of Medicine on this point, for it seems evident that there is a greater chance of soaking in the subjects during a school course than in the shorter time at the university. There is a danger amounting to a certainty that a boy of sixteen has not yet got a *systematic* knowledge of the sciences, assuredly also it is possible to cram up a subject for an examination in a short time, yet it is a much less sound way of acquiring knowledge; so while the work for the First Professional can be crammed up in a year, surely it is a very partial knowledge of chemistry, physics, and biology that is thereby attained, and must be either very shallow or scrappy.

Indeed, to go farther and speak plainly, any penitential robes which some of us feel we ought to wear on account of other things, such as our comparative failure to teach the biological sciences or of the restricted field of our survey of science, we feel inclined to hand over to the university for their own use when they reflect on their arrangement of the initial stages of a medical's career.

We feel that it is a real shame to make such boys as have gone through the bulk of your elementary syllabus go through it again without a reasonable prospect of reward. We look at your syllabus of work and realise that it would be difficult, on our standards, to overtake all there laid down. We consider the time that you devote to the subject, and we look at your examination papers and realise that it would be much less difficult to get up to any standard likely

to be attained in practice. One of the strongest feelings expressed at our meeting was that much of what is taught in the preliminary classes at the university might reasonably be required as a test of fitness of entry to the medical career. My fellow science teachers also specially request me to point out that the standard for the Preliminary Examination for medicine is on a lower plane than that of other professions and that it ought to be raised, and a further suggestion was made that two compulsory subjects for the Preliminary should be English and science. So strongly were these opinions held by some, that they were declared to be fundamental to any useful discussion of any other questions asked of us.

It does seem evident that boys who go up to the university need to be divided into two classes: those who have had adequate preliminary training and those who have not. The second class are either not yet fitted for taking up medical studies, or are naturally gifted but unfortunately educated youths, and a different course of instruction should be provided for them than for the first class, who with their preliminary knowledge should not be *compelled* to attend such a course. Doubtless these better trained youths would benefit by going over a more advanced course if time permitted, but they can derive little benefit by going over again an elementary course alongside of comparative beginners.

The general effect of this suggestion, if adopted, would either be to raise the standard for the basic sciences in the First Professional, with the possibility of even greater development of their specifically medical aspects than at present is possible; or, if it is considered that this raising of the standard is unnecessary, then a year or a portion of a year might be saved to these better boys for their more purely medical studies.

(*d*) We feel, then, that in the physical sciences at any rate our work at school should tell in the Preliminary or in the First Professional, or in both, and that the boundaries of school and university should be more closely delimited. Schools might, and perhaps should, teach some biology; and it might be worth while to consider whether the Preliminary Examination in science should consist of the three subjects of Chemistry, Physics, and Biology (with a higher standard in the First Professional); or secondly, whether it is not possible to give the First Professional less of a medical aspect and make it more what could be expected from an advanced school course; or thirdly, to keep things as they are and let boys take only the more physical part of the examination from school.

"*Ne sutor ultra crepidam*," and we are unanimous that the teaching of medicine, or the giving of a specially medical trend to our tuition is not our business. The general education of a boy is the work of the school; his professional education is that of the university; and while

his later years at school can be, and ought to be, somewhat specialised, yet this is not to say that they can be devoted to technical training. Hence while it may be possible to teach chemistry, physics, botany, and perhaps zoology up to an even higher standard than at present obtains, yet we have to remember that not all our science specialists are going to become medical students, and such of these sciences as we teach should be taught from a rather broad point of view, even though for training purposes certain portions are found suitable for intensive study. It is not wise to gain specialised education at the expense of the continuance of general education.

There is also another point to make in this connection. Is not eighteen an early enough age to go up to the university? At sixteen, is a boy really fitted to become a university "man" with advantage to himself or others? I must express my regret at the present tendency for the untrained and immature lad to go off to the university at an age when he would derive the most benefit from his scholastic activities, including those not specially scientific. It is possible that, as a result of the war, boys may have to start special preparation for their life work earlier than is desirable, but it is a pity to encourage it. Hence, if it could be recognised what work was the province of the school, and what of the university, it might help to make the leaving age more uniform with advantage to both school and university. That it would be of advantage to the boy to stay on can scarcely, I think, be denied, for in their later years at school prospective medical students would not study science exclusively. They will be better scientific men if they still keep in touch with languages and other features of a literary education as long as possible.

Some may fear that if science were started earlier than it is at present in the schools of the Public School type the general education of the average boy would be deteriorated. I do not think so. I expect it would be greatly improved, and especially so in the case of some of the flotsam and jetsam who at present get less benefit than their fellows from their discouraging efforts in early language specialisation but who have good stuff in them naturally. I do think that if the chief recommendations of these two Commissions were adopted they would allow of an even better general education of the average boy and a more balanced one for the best boys; and if the schools and the universities could come to an agreement as to their respective spheres of training, it would be greatly to the advantage of both parties and would have a valuable effect in connection with the training of medical students.

NEW BOOKS.

Radiography and Radio-Therapeutics. Vol. II. Radio-Therapeutics. By Robert Knox, M.D.(Edin.). Pp. x.+219. With 15 Plates and 100 Illustrations. London: A. & C. Black. 1918. Price 15s.

Formerly combined with radiography, Dr. Knox now wisely presents the subject of radio-therapeutics in a separate volume. He is again to be congratulated on producing a book which is probably the finest and most reliable of its kind in the English language.

Clear, concise, and very practical, the various chapters are comprehensive, and nothing of any importance is omitted. The indication for X-ray treatment of skin disease, growths, uterine fibroids, exophthalmic goitre, and the method of application in ringworm is well described and simply written.

Of special interest is the chapter on the use of radium, and the illustrations are most helpful. The book is further brought up to date and enhanced by reference to Cole's work on the value of radium emanations in plastic surgery of the face. The cases of keloid scars following on wounds of the face and neck are remarkably good.

Medical Contributions to the Study of Evolution. By J. G. Adami. Pp. xviii.+372. London: Duckworth & Co. 1918. Price 18s. net.

Under this title Professor Adami has republished his Croonian Lectures (1917) on Adaptation and Disease, together with a number of earlier papers on pathological questions which have a bearing on general biology; these form the second and third parts of the volume, under the general headings, "Heredity and Adaptation" and on "Growth and Overgrowth" respectively. Professor Adami's other writings have assured him a foremost place among medical scientific men, and whatever he says is listened to with due appreciation by his own profession. In this volume he addresses a larger circle, for he claims in it—and rightly—that biologists in general must take cognisance of the work of pathologists in its bearings on evolution. The subjects with which he deals are among the most obscure as well as the most important in the whole range of biology. In the short time since the book appeared it has already been reviewed and criticised at considerable length by many medical as well as purely scientific journals, and it seems to us unnecessary here to attempt any discussion of Professor Adami's views,

further than to say that he has produced very strong evidence in favour of the possibility of bacteria acquiring new characters in response to changes in their environment, and transmitting these characters through successive generations. The acceptance of such a fact as proved would, of course, profoundly modify our theories of heredity. It seems to the mere doctor almost incomprehensible that the Croonian Lectures should have provoked such a polemic as that of Professor Ray Lankester, reprinted, with Professor Adami's rejoinder, as an appendix to this volume. As an exhibition of "frightfulness" it may have its uses, but, apart from this, it is scarcely a form of controversy which deserves to be perpetuated in print.

Fibroids and Allied Tumours (Myoma and Adenomyoma): Their Pathology, Clinical Features, and Surgical Treatment. By CUTHBERT LOCKYER, M.D., F.R.C.P., F.R.C.S. With an Introductory Notice by ALBAN DORAN, F.R.C.S. Pp. xvii. + 603. With 316 Illustrations. London: Macmillan & Co., Ltd. 1918. Price 63s. net.

THIS volume is divided into three parts. Part I. deals with myoma, Part II. with adenomyoma, whilst Part III. has been devoted to a detailed description of the various operations for the removal of these tumours; to the treatment, surgical and otherwise, of complications; and to the after-treatment of abdominal and vaginal operations. The author holds as an article of belief that no one should undertake the surgery of the pelvis unless he has the requisite knowledge and experience to deal with intestinal and other complications, and he has devoted the last chapter of the work to the technique of such operations on the intestines and ureters as may become necessary during a difficult hysterectomy.

The author has dealt fully with the problems connected with adenomyoma; these structures have scarcely received the attention from British writers which is their due, and the extra-uterine origin of some of these growths is emphasised.

Dr. Lockyer has succeeded in producing a book which will become a classic work of reference in gynecology. He has added to his already brilliant reputation by the publication of this volume. It is a further evidence of his zeal and skill as a pathologist and gynecologist, as well as to his impartial and judicious criticism of the opinions and methods of others.

The illustrations are of a particularly high order, and leave nothing to be desired.

We have no hesitation in saying that this book is a credit to British gynecology, and that it is a model of careful and painstaking scientific work.

Amputation Stumps: Their Care and After-Treatment. By G. Martin Huggins, F.R.C.S. Pp. 215. With 95 Illustrations. Oxford War Primers. London: Henry Frowde and Hodder & Stoughton. 1918. Price 7s. 6d.

This handy volume is a valuable and opportune contribution to the surgery of war wounds. It deals with the physiology, pathology, and treatment of stumps, and links the work of the surgeon, who is responsible for the condition of the stump, with that of the mechanician, whose business it is to supply the artificial limb.

As surgical specialist to the Pavilion Military Hospital, Brighton, the preparatory hospital for Roehampton, the author has had a very large experience of stump cases. In addition, by studying the fitting work at Roehampton, he has gained a thorough insight into the problems which the limbmaker has to face.

Among the more important subjects dealt with are "re-amputation," about which the author has much valuable information to give; the causes of delay in healing of stumps; nerve troubles; deficient movement of stumps and the appropriate treatment; and the suitability or otherwise of stumps at different levels for artificial limbs. The author suggests a modification of Syme's method of amputating the foot, which hardly seems called for, but is on surer ground when he draws attention to the mistake of retaining the old "seat-of-election" amputation below the knee as the best. Most surgeons would now apply "seat-of-election" to an operation much lower down than the old one adapted to a bent knee bearing.

The text is clearly expressed, well printed, and fully illustrated. We advise our surgical readers to purchase this book without delay, and to study it carefully.

Tumours: Their Nature and Causation. By W. D'Este Emery, M.D., B.Sc.(Lond.) Pp. xx. + 146. London: H. K. Lewis & Co., Ltd. 1918. Price 5s.

A feature which characterises the cells of tumours, and especially of malignant tumours, is the assumption by the cells of the habit of growth, a phenomenon which resembles to some extent the change produced in the ovum by fertilisation. The author of this book suggests that the stimulus to proliferation, in the case of tumour cells, must be some living force, such as the presence of intracellular parasites. Without being able to produce definite evidence of parasites in relation to cancer or to tumours in general, a hypothesis is developed in support of the parasitic theory, based upon three postulates: (1) The microbe which causes tumour formations must be so small as to escape detection by any means at present available; (2) for some part of its

life-history it must inhabit the cell, or perhaps its nucleus; (3) it must produce a toxin which has the power of inducing cell-division.

Although not entirely convincing, the author has presented his views in such a fair and scientific spirit as to merit the attention of those who are interested in this controversial subject.

Plaies du pied et du cou-de-pied par projectiles de Guerre. By E. Quénu. Pp. 464. With 447 Illustration. Paris: Libraire Felix Alcan. 1918. Price fr. 16.50.

In this handsome volume M. Quénu has recorded the results of over five hundred observations made at the Cochin and Val-de-Grâce Hospitals on war injuries of the foot. There is practically no lesion of the foot produced by projectiles that is not described and illustrated by photographs and radiograms; and the clinical course (often prolonged and chequered), the operative treatment and ultimate results, are fully considered.

Painless Childbirth in Twilight Sleep in the East. By Cecil Webb-Johnston, M.B., Ch.B., Capt. R.A.M.C.(T.F.). Pp. vi. + 123. Calcutta and London: Butterworth & Co. 1918. Price Rs. 4 net.

In this interesting and well-written book Captain Webb-Johnston puts forward a strong plea for the use of scopolamine-morphine narcosis in midwifery practice in India and the East.

The ill effects of labour pain on the modern educated woman are pretty well established, so, if a painless childbirth can be safely guaranteed without injury to the child, she should reap the benefit. Dr. Webb-Johnston is willing to stake his reputation that if the drugs —scopolamine and morphine—are properly administered no bad effects to mother or child will ensue.

This is the first book on this subject published in India, and we congratulate the author on having placed, clearly and sanely, before his colleagues the advantages, as well as the disadvantages, of this method of semi-narcosis.

A Medical Dictionary. By W. B. Drummond, M.B. Pp. x. + 625. London: J. M. Dent & Sons, Ltd. N. D. [1918]. Price 10s. 6d. net.

This work seems to us an excellent example of the type to which it belongs. It is intended for the laity, and gives information calculated to amplify, not to supersede, medical advice. If one had any general

criticism to offer, it would be to question the usefulness of the histological drawings—*e.g.* Fig. 95, showing karyokinesis. A fairly careful study of the book has confirmed our anticipation that, coming from Dr. Drummond, there would be very few inaccuracies. We noted, however, "Graffian" for "Graafian" (p. 245), and the questionable definition of blackwater fever as "a form of malaria." The blemishes, however, are very few considering the comprehensive character of the *Dictionary*, and we believe it will be found useful.

Syphilis and Public Health. By EDWARD B. VEDDER, A.M., M.D. Pp. 315. Philadelphia: Lea & Febiger. 1918. Price $2.25.

AT a time when the problem of the control of venereal disease is being taken up by the State, and when the public conscience on this matter has been thoroughly aroused, this book cannot fail to attract widespread attention. It contains probably the most complete and concise account that there is in English of the measures adopted in various countries to control the spread of venereal disease. The experimental work on syphilis is reviewed in some detail, and the important facts gleaned from the vast literature on the subject are put down in a very clear and readable form. The chapter dealing with the infection and transmission of syphilis is a particularly complete and interesting one, the author having spared no pains in collecting all the available evidence in regard to the questions raised.

The most valuable part of the book, however, is that referring to public health measures, and in this will be found a storehouse of accurate information in regard to the value of such measures as the control of prostitution and the notification of venereal diseases. In spite of the many arguments which have been brought forward against the latter measure, the author pronounces in favour of it. He, however, considers that the factor of prime importance is the provision of adequate facilities for the diagnosis and treatment of those infected, and it is interesting to note that the measures he advocates are virtually those which have recently been adopted in this country.

This book may be cordially recommended to all practitioners of medicine as containing in small compass and in a very readable form a wonderfully complete account of all the essential facts relating to a problem which at the present time is of pressing national importance.

The Prevention of Venereal Diseases. By OTTO MAY, M.A., M.D. Pp. 240. London: Henry Frowde and Hodder & Stoughton. 1918. Price 7s. 6d. net.

THE author, who was honorary secretary to the National Council for Combating Venereal Diseases, gives in convenient form the findings

and recommendations of that body, but, in addition, presents the case for "personal prevention," of which he is a strong advocate. The National Council "refrained from recommending the provision of prophylactic outfits as part of its policy," and the author considered this so serious a mistake that he resigned his seat on the Council.

As an appendix there is added a lecture to the troops on "Venereal Disease" which will serve as a useful model to those called on to give public instruction on such matters.

Other appendices contain lists of the institutions established for free treatment in this country and digests of the Venereal Diseases Act, 1917, and the Social Hygiene Act, 1917.

This little volume can be recommended to all who wish to become conversant with the measures already adopted or in prospect in the campaign against venereal disease in this country.

BOOKS RECEIVED.

ALLEN, W. CARROLL. Local and Regional Anesthesia. Second Edition. (*W. B. Saunders Co.*) 28s.

BARRETT, J. W. The Twin Ideals: An Educated Commonwealth. 2 Vols. (*H. K. Lewis & Co., Ltd.*) 25s.

CABOT, RICHARD C. Differential Diagnosis. Vol. II. Second Edition. (*W. B. Saunders Co.*) 25s.

CHAUDHURI, T. C. Life of Sir William Ramsay . . . . (*Butterworth & Co., Ltd.*) Rs. 1.8

CLARKE, ERNEST. The Errors of Accommodation and Refraction of the Eye. Fourth Edition . . . . . (*Bailliere, Tindall & Cox*) 6s.

DEANE, H. E. Gymnastic Treatment for Joint and Muscle Disabilities. (*Henry Frowde, Hodder & Stoughton*) 7s.

DOYEN, E. Surgical Therapeutics and Operative Technique. Vol. II. English Edition. H. Spencer-Browne in collaboration. Complete in 3 Vols. . (*Bailliere, Tindall & Cox*) 75s.

DUVAL, PIERRE. War Wounds of the Lung . . . . (*John Wright & Sons, Ltd., Bristol*) 8s. 6d.

GRAY'S Anatomy. Twentieth Edition . . . . . (*Longmans, Green & Co.*) 37s. 6d.

HART, BERNARD. The Modern Treatment of Mental and Nervous Disorders. (*Longmans, Green & Co.*) 1s.

HOUSTON, A. C. Rural Water Supplies and their Purification. (*John Bale, Sons & Danielsson, Ltd.*) 7s. 6d.

JELLETT, HENRY. A Short Practice of Midwifery for Nurses. Fifth Edition. (*J. & A. Churchill*) —

KEEN, W. W. The Treatment of War Wounds. Second Edition. (*W. B. Saunders Co.*) 8s. 6d.

KEITH, ROBT. D. Clinical Case Taking . . . . . (*H. K. Lewis & Co. Ltd.*) 3s. 6d.

LUSK, GRAHAM. The Science of Nutrition. Third Edition . . (*W. B. Saunders Co.*) —

MACKENZIE, WM. COLVIN. The Action of Muscles . . . (*H. K. Lewis & Co., Ltd.*) 12s. 6d.

MAYO Clinique, 1917, Collected Papers of the. Vol. IX. . . . (*W. B. Saunders Co.*) —

PARAMORE, R. H. The Statics of the Female Pelvic Viscera. Vol. I. (*H. K. Lewis & Co., Ltd.*) 1s.

PRENTISS, C. W. Text-Book of Embryology. Second Edition. . (*W. B. Saunders Co.*) —

PYLE, W. L. System of Ophthalmic Practice; and KNAPP, ARNOLD, Medical Ophthalmology . . . . . (*Wm. Heinemann (Medical Books), Ltd.*) 21s.

THOMSON, WM. H. A Treatise on Clinical Medicine. Second Edition. (*W. B. Saunders Co.*) 24s.

WELLS, H. GIDEON. Chemical Pathology. Third Edition . . (*W. B. Saunders Co.*) 18s.

WHITING, A. Aids to Medical Diagnosis. Second Edition. (*Bailliere, Tindall & Cox*). Cloth, 3s.; paper, 2s. 6d

WILSON, R. M. The Hearts of Man . . . (*Henry Frowde, Hodder & Stoughton*) 6s.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES.

Annus Academicus 1918-1919.

In this issue we publish our Annual Educational Supplement, which contains particulars of the medical curriculum in the Scottish Universities and other teaching institutions.

In Edinburgh the classes open on Tuesday, 8th October, and continue till Wednesday, 18th December, when the Christmas vacation begins. On Tuesday, 7th January 1919, the classes reopen, and the Winter Session ends on Friday, 14th March. The Summer Session begins on Tuesday, 15th April, and closes on Friday, 27th June.

The Medical Curriculum.

Although Sir George Newman's *Notes on Medical Education** bear reference solely to the English schools, and therefore to a system which in some degree differs from our Scottish one, the problem he has to consider is essentially the same as that which has been under review in Edinburgh. For although the English schools have for the most part developed, more than with us, directly around the hospitals, that has never prevented the attainment by the best of them of a true university standard, and many of the weak spots on which Dr. Newman lays his finger exist to as great a degree in the Scottish schools, notwithstanding the generally closer relation which exists between universities and hospitals. This being so, it is the more interesting that the general tenor of Dr. Newman's notes agrees fairly well with that of the series of papers on medical education which have been contributed in response to the inquiry of the Pathological Club, and which have been appearing month by month in the *Journal*.

Without entering into minutiæ, it may be said that the chief faults Sir George Newman traces in medical education in England are the

* *Some Notes on Medical Education in England*, Stationery Office, 1918, price 9d. net.

dominance of the examinations, an insufficient co-ordination of the various parts of the curriculum, and a failure here and there to attain to a university standard in teaching. Few will cavil at these criticisms, for the defects to which they refer are patent; yet even were all these faults remedied the question would not be closed, because the training of the medical man of the future requires modification in its outlook even more than in its method. Sir George Newman lays it down that the doctor of to-morrow must practise preventive medicine with the same industry and enthusiasm as he of yesterday practised curative medicine. To accept such a view, inevitable as it probably is, involves a revolution in the curriculum which it will tax all the imagination and energy of the teachers to compass.

It is a commonplace that the sphere of the general practitioner is yearly becoming more circumscribed, and were this due entirely, or even chiefly, to the advances of specialism, it is difficult to see how the process could be checked, or how the fact can be reconciled with another, equally valid, that the general practitioner is the backbone of the profession. But it would seem that, side by side with the encroachment of individualist specialism, the State, in its growing assumption of guardian of the public health, has made almost equal inroads into the daily work of the doctor. His status in relation to the public has become greatly modified in recent years; he has adapted himself incompletely to his new environment, and he and the community have alike been losers. Those to whom Dr. Newman's conception of the education of the future student appears at first a little distasteful will perhaps become reconciled to the prospect if they realise that thereby the general practitioner will regain consideration and prestige which have become a little dimmed.

The changed status of the doctor has not sprung suddenly into being. It has been impending ever since the State began to concern itself with public health. The process was slow and gradual at first, but within the last ten years it has gone on apace, and the war has only accelerated what was already a well-advanced change. The general practitioner nowadays finds himself in constant touch with the State in his practice—the Insurance Act, notification of births, legislation on tuberculosis, on venereal diseases, on mental deficiency, child-welfare movements—these are only a few of the newer communal activities which impinge on the old individualism of practice. The student is not sufficiently taught about such things and what they imply: he has to learn about them tardily in his practice, and is not equipped at the outset to take his place as a well-oiled wheel in the public health machinery.

This inadequacy of the existing teaching of preventive medicine is perhaps the strongest count which Sir George Newman brings against the existing curriculum. The same views have been expressed

by more than one contributor to our discussions here. Although Sir George develops at considerable length what the student ought to be taught of preventive medicine, he does not clearly say how it is to be done. It is, as he says, by no means to be desired that the ordinary student shall become a "diminutive medical officer of health." One thing, therefore, seems plain. The end desired will not be reached by any "super-course" of public health, as a sort of coping-stone to the edifice of the other classes. What is needed is that the idea of prevention in its widest sense, as a subject for investigation and research, should imbue the teaching of all clinical subjects as the spirit of research in pathological and clinical diagnosis does at present. It cannot prove impossible to teach the student to take the same sort of interest in the social causes of disease (it is already done to some extent in the case of tuberculosis) as he does in their bacteriology; or in the physiology of fatigue affecting industrial output, as in fatigue of a nerve-muscle preparation of a frog; or in the pharmacology of alcohol in social life, as in its action on the heart. It is not that he need learn more, and especially it is not that clinical observation should be neglected, but that his orientation towards disease should undergo a change and his outlook be widened.

While this notion of "preventive medicine" stands out as the keynote of Sir George Newman's memorandum there is, even for those to whom this point of view does not particularly appeal, much else that is instructive in his criticisms. His claim for better co-ordination between the preliminary and intermediate sciences and the clinical subjects, his reiterated insistence on bringing the student in contact with the patient and in teaching him to learn for himself at the bedside, his deprecation of the water-tight compartments into which the medical course has fallen, his appeal that anatomy and physiology should be taught more from the point of view of the living man, his desire to unburden the student of work, and to make examinations follow, not guide, the course of study are all criticisms applicable to any curriculum, whether its object be to perpetuate and improve the present type of physician or to produce the clinician trained to look beyond pathology and therapeutics to prevention as his goal.

CASUALTIES.

KILLED in action on 22nd August, Major BERNARD CHARLES TENNENT, M.C., R.A.M.C.

Major Tennent was an Edinburgh graduate and was practising in New Zealand at the outbreak of the war. He took a commission in the R.A.M.C. in January 1915, and from then until the day of his death served almost continuously on different fronts, and after winning the M.C., and bar, was gazetted Major in May 1918. He was the son of the Rev. E. C.

Tennent, Marlonborough, New Zealand, another of whose sons was killed at Gallipoli. In June 1917 Major Tennent married Daisy, youngest daughter of Mr. C. C. Skarratt.

DIED of wounds on 12th August, Major JOHN PROCTOR, R.A.M.C.

Major Proctor, after graduating M.B., Ch.B. with distinction at Aberdeen University, held various hospital appointments in London and practised at Eye in Suffolk.

DIED on service on 23rd August, Major-General WILLIAM GEORGE BIRRELL, A.M.S.

Major-General Birrell graduated M.B., C.M. at Edinburgh University in 1880 and joined the R.A.M.C. in the following year. He served in the Sudan Campaign in 1885, in the Burma Campaign of 1886-87, in the Nile Campaign of 1898, and in the present war as M.D.S. at Gallipoli.

DIED on service on 14th August, Dr. PHILIP GRAY-MARSHALL, Surgeon, Admiralty transport.

Dr. Gray-Marshall obtained the Triple Scottish Qualification in 1902 and the D.P.H. in 1903.

KILLED in action on 25th August, Major FREDERICK NOEL JOHNS, M.C., N.Z.M.C.

Major Johns graduated M.B., Ch.B. at Edinburgh University in 1913.

KILLED in action on 27th August, Captain ALICK MORTON, R.A.M.C.

Captain Morton graduated M.B , Ch.B. at Glasgow University in 1916.

STUDENTS OF MEDICINE.

DIED from gas poisoning, Second-Lieutenant ALLAN JOHN EDMISTON, Scottish Rifles.

Lieutenant Edmiston was a student at Glasgow University.

KILLED while on service, Second-Lieutenant CHARLES J. G. SHERIDAN, R.A.F.

Lieutenant Sheridan was a student at Glasgow University.

Chalmers Hospital.

THE Directors of Chalmers Hospital have appointed Dr. J. S. Fowler Consulting Physician to the hospital in succession to Dr. Byrom Bramwell, whose term of office expires on 1st October.

THE PROVINCE OF MEDICAL ETHICS.

By GEORGE PARKER, M.D.

So much has been said of medical ethics of late years that it seems desirable to inquire what its foundations and scope really are. Still more is this important at the present time, since the General Medical Council has ordered that instruction in the subject should be given to all students that they may recognise the high standard required of them and be helped to avoid the mistakes and jealousies which are liable to occur in professional life.

Uninformed opinion on the subject is apt to be (as Seeley said of another matter) either bombastic or pessimistic. The bombastic man is perpetually saying that anything he dislikes is derogatory to the profession or contrary to our dignity, though he cannot tell you why; while the pessimist insists that the sole aim and rule of every man is his own interest and self-advertisement, for which he sacrifices both his neighbours and patients. We shall endeavour to show that both these views are far from the truth, and that a reasonable system of medical ethics exists and is generally obeyed.

What then is the actual basis of medical ethics? Now the duties and obligations imposed on medical men, as lawyers such as Austin would express it, are of three kinds: (1) Religious. (2) Legal. (3) Social or ethical. They have their origin respectively in the Divine law, the law of the State, and the rules given by some kind of public opinion or moral law. From each of these sources we get commands laying down courses of conduct under so-called sanctions or penalties for default, and the persons affected are said to be under a duty or obligation to do or refrain from doing certain acts. In some cases, but not in all, the creation of a duty gives someone else a claim to the benefit of that duty. This is called a right. Thus a law may order A. to pay certain fees to me, or it may order all persons to leave me in the enjoyment of a house. I am then said to have a right to those fees or that house. Right has also another meaning, viz. what agrees with a certain standard or is correct. If a man says he has a right to do this or that it is most important to find out by what law he has this right, for it is often used to mean what he personally thinks is desirable or just and not what has been given by some law or accepted rule. Similar confusion is caused by the use of the word law to express a uniformity in the physical world, such as the laws of heat or

gravity, but such laws do not give commands, duties, rights, and sanctions in the ordinary sense.

1. In this discussion it is not our province to examine the religious duties imposed by Divine law whether revealed or elaborated by the conscience, or as painted by the Stoics, Kant, and Rousseau in the law of Nature, though we at the same time acknowledge that these duties and obligations under every system of religion are regarded as of the highest importance since medical work has to do not with dead matter but with such sacred things as human life and happiness both for the present and future generations. Some religions have gone so far as to consider the care of the sick man, be he saint or sinner, as a direct service to the Divinity. "I was sick and ye visited me" say the Gospels, and at all events, in many of the greatest crises of our lives, our weal or woe largely depends on the care and skill of the physician.

2. Again a great part of our medical jurisprudence is taken up by the legal duties and obligations imposed in medical matters by the sovereign body in the English State on the persons subject to it, together with the sanction or penalty attached to the breach of them. Thus, on medical men themselves as a class, special duties are imposed by State law such as:—

(*a*) To use reasonable skill and care in the treatment of patients.

(*b*) To report certain infectious diseases to proper officials.

(*c*) To give free certificates of the cause of death.

(*d*) To report births.

(*e*) To observe certain rules of procedure in the Courts.

(*f*) To refrain not only from felonious acts and misdemeanours, but also from conduct which has been specially defined by the General Medical Council as infamous in a professional respect.

(*g*) Indirectly other matters, such as secrecy as to things learnt in the course of professional duty (except when otherwise ordered in a Court), are enforced by the award of damages when injury can be proved.

All these are legal duties and do not concern us now. We may think them good or bad, just or unjust; we may strive to get them amended, but they are imposed by State law, and until that law is altered they have to be obeyed. The special rules laid down by the General Medical Council are often spoken of as ethical, but being authorised by statute they are, strictly speaking, State law. They refer to what is termed "infamous conduct," and this has been defined by the Courts as conduct in

the pursuit of one's profession which will be regarded as disgraceful or dishonourable by one's professional brethren of good repute and competency. The chief offenders thus declared to be guilty of infamous conduct in a professional respect and liable to the penalty of removal from the Medical Register are:—

(1) Anyone who shall have given an untrue or misleading certificate, or report to a public authority.

(2) Anyone who knowingly enables an unregistered person to attend or treat patients, or issue certificates, or otherwise to engage in professional practice.

(3) Anyone who employs an unqualified assistant, but this does not restrict the proper training of *bonâ-fide* students as pupils under due oversight.

(4) Anyone who, by administering anæsthetics or otherwise enables an unqualified person to operate or practise medicine, surgery, or dentistry.

(5) Anyone who advertises, or sanctions advertisements with a view to his own gain, especially if depreciatory of others; or who employs or sanctions the employment of canvassers for the purpose of procuring patients; or associates himself with any society which practises advertising or canvassing for procuring patients.

(6) Anyone who enables an uncertified woman to act as a midwife contrary to the law.

(7) Anyone who, without being guilty of felony or misdemeanour, commits such clearly scandalous acts as drunkenness when professionally engaged, or adultery with a patient.

Besides imposing these legal duties and obligations on qualified medical men, the English law imposes duties on other persons towards them, *i.e.* it gives them privileges or legal rights:—

(*a*) To recover fees in the law Courts for professional services.

(*b*) To hold certain public medical offices.

(*c*) To give medical certificates.

(*d*) To claim exemption from serving on juries.

(*e*) To obtain certain fees when giving evidence.

(*f*) To have some share in the appointment of the General Medical Council and in the management of the National Insurance Act.

It does not, however, given them the sole right to practise medicine or surgery, which are free to anyone, provided that he does not give himself out to be a registered medical practitioner. However, this freedom is not of great value because of the limita-

tion of the powers to recover fees and to issue death and other certificates to registered medical men only.

Neither does the law impose a duty on a medical man to attend any person whether he will or no. Until he actually enters into a contract to attend anyone he is perfectly free to give or refuse his services. There are of course emergencies when a refusal might lead to serious injuries or the death of the patient. The doctor refusing will evoke great odium and hostility among the general public, but the law refuses to punish him for refusing to undertake service.

3. Now, ethical rules are on a different footing and we have to consider what is their origin. In the science of human conduct it is possible to deduce from certain principles what that conduct ought to be, and we may thus form rules of ideal or abstract morality. The Utilitarian, the Intuitionist, and every variety of ethical philosopher take certain facts of psychology or sociology as a basis. They test and examine them, seek to discover what constitutes moral goodness, and examine what courses of action do or do not conform to this standard. They may hold that we intuitively perceive certain forms of action to be obligatory, or, on the other hand, that the rightness of any action depends on its conducing to some desirable end, such as perfection or happiness; but having settled upon their basis, they must analyse human conduct and show what forms of it agree with this ideal—what ought to be done if their premises are accepted. Thus, having agreed upon a method and basis, we may deduce what is the ideal conduct which medical men should pursue with respect to their patients and fellow-practitioners. But another fruitful and important inquiry may be undertaken. This investigates what the accepted rules of conduct actually are, *i.e.* what conclusions have men generally come to at the present time and in this civilisation. Neither in this inquiry nor in the ideal ethics do we find a determinate body which can be named as the author of the rules, such as exists in State law; but for all that a large number of definite rules are accepted and acknowledged in various departments of human conduct. This is true both in the widest sphere of morals which concerns the actions of every man, and also in those special departments which have to do with the acts of individuals or groups of men in certain subjects or relations. Thus what is called "international law" or the *jus gentium* consists of the special rules governing the relations of the groups of men called civilised States towards each other.

Positive or accepted morality or ethics is composed of such rules. It is of primary importance to find out what these rules actually are, but the moral quality of them, their goodness or badness, is not a matter of indifference (T. L. Lawrence). While we investigate the existing facts it is open to us to point out what improvements are possible and what defects are present, provided we make a clear distinction between the rules which are generally accepted and what we think they should be.

Medical ethics, meaning certain positive or acknowledged rules of social conduct, is thus a department of general ethics and concerns only a limited class of actions or relations. It may be defined as the accepted rules which govern the professional conduct of individual practitioners towards each other and towards laymen, and also that of the medical profession as a whole to the rest of the community. Some would add that there are rules governing the action of laymen towards doctors in these matters but it is clear that these last stand on a totally different footing as to their authority and sanctions.

As to the source and authorship of these rules we may say that they have been gathered in course of time from the opinions of members of the profession of good repute and competency with more or less of the tacit consent of the rest of the community. In many cases they have been elaborated by discussion in meetings of those experienced in the matters concerned, and, finally, they have been formulated and expounded by writers of acknowledged standing as showing their general acceptance.

The persons affected are primarily the members of the profession. In some cases laymen are indirectly affected too, as when a person finds himself refused the services of one doctor because he is actually being attended by another. It is truly said that the layman is free to do what he likes; it is only the doctors who are bound, and we have seen that the layman has no legal right to compel the second doctor to attend without his free consent; yet a real inconvenience has been inflicted on that person, and it is only when public opinion has been satisfied of the expediency of such a rule that it will be accepted by laymen and doctors alike. Again, a great number of the rules are actually in favour of the layman, such as those which forbid indirect gains and commissions to the doctor, or the disclosure of the patient's secrets. The ideal moralist would urge that as patients and practitioners are in the position of employers and employed, rules will not be fair unless both parties share in making them. No doubt an ideal system

would include oversight by representatives of both sides—the *communitas communitatum* of English history. Indeed, in 1453, Parliament enacted that the rules of the trade guilds, which were similar regulations, must be confirmed by the local community, but this gave them the force of State law. It would be difficult to get such a court of reference for merely ethical rules. A conference of the kind indeed has recently been held between members of the legal and medical bodies on the definition of the criminal responsibility of the insane with good success. However, the lay public, as it is, quickly exert a real and active power if they feel themselves injured by medical rules.

Where the profession, as a whole, has to arrange the conditions of their work with the State or large corporations, it has been found necessary to get definite rules agreed on by both sides. In the case of the National Insurance Act the ideal moralist was right, for the State, through the Commissioners, defined the conditions of work by regulation whether the medical men agreed or not. Their collective bargaining was a right of comment and nothing more. They had no right of veto on the terms and conditions under which their services were given. Their only means of defence was a general strike.

Is the medical profession, as a whole, and not merely the individuals composing it, subject to such rules? Or, to put it otherwise, are there accepted rules governing the action and imposing duties on the profession towards the rest of the community? This does not mean, is there an ideal line of conduct which it should pursue? It is clearly not a corporate body, yet, in some respects, it approaches to the status of one. The law of the land gives it a formal register of members. It is authorised to elect representatives, and in the case of the General Medical Council these representatives, with others, have the power to sue in the law Courts, to legislate, and to see that education is efficient and conduct respectable. Yet this does not create the medical profession a corporation, such as the Company of Barber Surgeons was in a mediæval town, or the Royal College of Physicians is to-day.

It has been argued that there is a moral duty incumbent on the profession, as a whole, to advise the State as to the needs of public health and to criticise from an expert standpoint the results of State action and to see that its services are adequately supplied to the poor as well as to the rich (*The New Statesman*, April 1917). Whether this is so or not, the profession and the text-writers have

recognised certain duties of the kind. The State is continually consulting it through various channels, such as the British Medical Association, and it is continually advising the State as to reforms which are needed, as well as drafting Bills and preparing evidence in favour of measures such as those on the sale of poisons and patent medicines. It has pressed on the general public the dangers of the use of alcohol, of ophthalmia neonatorum, of deficient sanitation, of tuberculosis and other matters, so that numerous diseases like typhus and typhoid have been wiped out and the average length of human life has been increased, although this activity clearly decreases the financial gains of practitioners. As a speaker once said, "My predecessor in this chair used to make £300 a year over typhoid cases while my consultations only average £5." This quasi-corporate work, too, has been steadily increasing in spite of the fact that the profession has no definite mouthpiece, and it has been, on the whole, vigorously supported by medical opinion and regulated by decisions. Thus it is clear that there are accepted principles, and even rules, directing the action of the profession, as a whole, both for the good of the community at large as well as for the protection and government of its members.

The penalties or sanctions imposed on medical men for the breach of the accepted rules, as distinct from those imposed by State law, are first, the disapprobation and detestation of the rest of the medical community and the disgrace incurred by conduct universally condemned; secondly, the refusal to meet in consultation such offenders except when the urgent need of a patient requires, or to accept them as colleagues at a hospital, or in any circumstances where combined action is necessary. Where a corporation, company, or public body has imposed undesirable conditions on medical practitioners whom they employ, combined action is sometimes undertaken, and a warning notice is issued requesting no one to accept service under them until the grievance is removed. In an extreme case, as at the passing of the Insurance Act, where unfair conditions were threatened, the possibility of a general strike or refusal to work, except so far as the urgent needs of patients required, was under consideration.

Various medical corporations, such as the Royal College of Physicians and other societies, inflict expulsion from their membership for serious offences against their rules, but the profession has no means of removing from the Medical Register those who offend against ethical rules except in the few flagrant or special cases

defined by the General Medical Council and incorporated into State law.

We have seen that with regard to the origin of the rules, besides the opinions of men of good repute and competency, and the gradual formulation of them by writers of repute, there has been active discussion and elaboration of them by medical societies. In fact, owing to various causes, a steady growth of definition has taken place of late. It may be worth while to trace how this activity has arisen. A hundred years ago there was little corporate life and feeling in any occupation, and little tendency to regulate professional action by rules (*The New Statesman, loc. cit.*). The reaction from the tyranny of the old trade corporations, which no longer harmonised with the conditions of industry, and the teaching of the economists of the *laisser-faire* school caused public opinion to be hostile to all forms of association. But a complete change has gradually taken place and endless unions and societies have sprung up on all sides, not only in medicine, but also in every branch of human activity. Each trade, profession, and industry has organised itself. Especially was this the case where a desire to advance the science or art concerned existed, or where a highly specialised art had necessitated scientific study and a long training. In medicine these conditions were all present, and the sense of collective needs was increased when the State gave it an official Register and the General Medical Council of 1858. The habit of meeting for the discussion of scientific subjects afforded an opportunity for consultation on other common difficulties in practice, as well as a voice to the feelings of individuals and a means of expressing the needs of the time. Thus it was gradually perceived that the peculiarly confidential position of the medical practitioner was inconsistent with the ordinary rules and maxims of competitive traders. It was seen that the man who advised useless operations and profited by pushing secret nostrums and by lying advertisements was a constant danger, not only to the public but also to the more honest practitioner who, having had a specialised scientific training, was ready "to supply disinterested counsel and service to patients for a direct and definite compensation wholly apart from expectation of other business gain" (*loc. cit.*). The two types of men could not work together, and the whole force of professional opinion was more and more directed against the untrustworthy man. Long ago such leaders as John of Arderne and Gale had warned medical men against this lower type of morality, and the corporations of their times regularly inflicted legal

penalties on the worst offenders, but, with the change from the socialistic state to pure individualism, almost all restrictions on professional conduct had been swept away till the revival we have spoken of took place in the middle of the nineteenth century. The General Medical Council was able to impose legal penalties on a few forms of misconduct, and the various medical societies exerted themselves in defining and condemning others. Chief among these bodies, the British Medical Association, with at present over 22,000 members, has not only gone on steadily discussing and elaborating rules of conduct but has appointed certain tribunals for the cases brought before it, following the example of the Royal College of Physicians and some other bodies.

Thus the Association, in each of its geographical divisions, orders the formation of an Ethical Committee, which (1) composes and settles differences between medical men and considers complaints of injuries such as slander against individuals, and (2) judges charges of conduct which infringe any of the accepted rules. Appeals are sent from this committee to that of the branch and finally to the Ethical Committee of the Central Council, where the case may be again heard in detail. If serious charges are proved, the Council with due solemnity passes sentence of expulsion from the Association against the offender as guilty of conduct contrary to the honour and interests of the profession.

As time goes on, rules have to be altered and adapted to new circumstances. What appeared "customary and even proper some years ago has often come to be universally condemned." Each generation has its own difficulties: the relation of the medical man to new organisations, such as provident dispensaries, insurance panels, qualified midwives, or general military service raises endless new questions, not to speak of other defects which the course of time shows in the old rules. Some things, which seemed unobjectionable to the State law or to the highest morality, may in time be found to need revision. Hence a gradual change is inevitable. Nor is the process peculiar to medical ethics. In State law similar changes are effected by fresh legal decisions, by legislation, or by principles and Courts of Equity, as the growth of moral sentiments or the change of social conditions create a need. It is remarkable that neither the Association nor any other body has attempted to classify the accepted rules, much less to form a code. This can hardly be, because there is no one body which claims to be the mouthpiece of the whole profession, for no difficulty appears to be felt in defining or laying down single aims

or rules. The American Medical Association has drawn up an admirable exposition of the principles of medical ethics, but leaves to the branch in each State the formation of a code of rules.

The subject-matter of the rules then is professional conduct towards our fellow-practitioners, our patients, and the rest of the community. Rules, too, have been made for general convenience on more or less indifferent matters, just as police regulations decide that all traffic shall keep to the left or the right, it does not matter which, provided that it is decided beforehand and enforced. What are the duties thus laid down by the text-writers? First, we are told that there are certain general principles of conduct with which everything else must agree; and, secondly, a number of perfectly definite rules, many of them being applications of the principles. General principles are clearly insufficient until the difficult task has been performed of deciding how they can be best carried out in the intricate relations of daily life. We saw that this method of deduction from general principles has been largely used in ideal ethics, but we agreed to inquire in medical ethics merely what are the conclusions arrived at. Now, since the writers claim that both the principles and the definite rules are part of their system, are all logical deductions accepted? Certainly not; many of them are not fitting subjects of rules and penalties, and many have not been yet decided. In short, as it is a growing science, the boundaries are continually changing and advancing. The principles are taken as tests, and conduct agreeable to them is *primâ facie* regarded with approval, but the accepted interpretations and rules are comparatively few. The writers appear, then, to describe two classes of actions:—

1. Actions which merit approbation as agreeable to the main principles.

2. Actions which are the subject of binding and definite rules.

They lay down as the main principles of conduct as follows:—

(*A*) The primary rule is that everyone should act towards his fellow-practitioners and towards his patients and the public as he would wish they should act towards himself. On this we may remark that as long as it continues to be made the foundation of the system and the test of other rules any sneers at an "antiquated etiquette" or "a money-grabbing device of thieves" lose all their point.

This being accepted, it is not, however, inconsistent in the same writers to say, as they do, that:—

(*B*) There are duties to oneself as well as to one's neighbours,

and therefore that every man should employ reasonable care for his own proper interests. Every moralist allows that we should aim at getting a fair wage for the labourer as well as fair work for the wages.

Finally the writers agree that:—

(*c*) Every man should strive to uphold the honour and lawful interests of the profession of which he is a member.

As to the class of actions generally approved of as based on these principles it is not altogether easy to draw up a summary from the general admonitions of the writers. To get as clear a view as possible let us take a well-instructed man who has consistently fashioned his conduct upon them and imagine him putting down his own rules in professional life. He will probably say: "There are certain things I aim at, such as:—

"1. *With regard to myself:*—

(*a*) To do the best possible work, scientific and practical.

(*b*) To get fair remuneration for my work.

(*c*) To get a fair share of practice.

(*d*) To get the confidence, respect, and co-operation of my patients in my treatment.

(*e*) To guard myself against thieves and blackmailers.

(*f*) To earn an honourable character worthy of my training and profession.

"2. *With regard to my fellow-practitioners:*—

(*a*) To abstain from slandering and depreciating them, and from various forms of self-advertisement.

(*b*) To abstain from unfairly taking away patients who are under the care of other men.

(*c*) To abstain from jealousy or causing it in others.

(*d*) To help them when I can, especially when they are ill or in distress.

(*e*) To aid them when possible to obtain fair remuneration for their work.

(*f*) To maintain the honour and lawful interests of the medical brotherhood.

"3. *With regard to my patients:*—

(*a*) To do my best to relieve their pains and to cure their diseases.

(*b*) To cheer them in their weakness and distress.

(*c*) To advise them impartially in their difficulties, and to protect them from thieves and swindlers when I can.

(*d*) Never to use my confidential position to injure, mislead, or seduce them.

(*e*) To accept no indirect gains by way of commission, or by recommending things in which I am financially interested.

(*f*) To charge them fairly for my services.

(*g*) To keep their secrets absolutely.

(*h*) To use no fraudulent secret remedies, nor to keep secret any new discovery to the injury of humanity and my own gain.

(*i*) To treat the poor with humanity and courtesy even more than the rich.

(*j*) To risk or sacrifice my own health, or even life, if really necessary in carrying out work which I have undertaken.

"4. *The profession as a whole should aim, with regard to the rest of the community,* at such things as the following:—

(*a*) To take care that every possible means are employed for the progress of scientific knowledge in the combat with disease.

(*b*) To advise the Government and the public as to the needs of the community in matters of health and the prevention and cure of disease, and a to the adequate supply of medical aid of al kinds to the poor as well as to the rich.

(*c*) To use its knowledge to expose fraudulent pretenders of healing, and also inefficient public health measures.

"5. *The profession as a whole, with regard to the individual practitioner,* should aim at such things as:—

(*a*) To protect his lawful interests and to prevent his being deprived of a fair recompense for his work.

(*b*) To see that a thorough and efficient education is provided for every student, and that no one is admitted to practise till he is properly qualified.

(*c*) To lay down a good standard of conduct, and to support the individual against those who infringe it.

(*d*) To strive to ameliorate conditions of life and labour, and lessen the hardships undergone by poor and struggling practitioners.

(*e*) To see that sound methods of insurance against

> sickness and misfortune, legal protection against blackmailers, and opportunities for study and recreation are provided for him."

He may perhaps go on to say that the patient owes certain things to the medical man though these are no part of medical ethics and have different sanctions. Such duties are:—

(*a*) He should truthfully and unreservedly confide in him the history of his illness.

(*b*) He should honestly and implicitly carry out his directions as to health.

(*c*) He should refrain from unreasonable calls and frivolous inroads on his time.

(*d*) He should pay his reasonable charges without evasion.

If we examine the matters which he has thus deduced from the general principles, we find that there are many which cannot be made the subject of rules, and others as to which rules have not yet been formulated, though nearly all of them are generally approved of. On the other hand, some are covered by accepted rules and actually belong to the following group.

The second class—the actions which are the subject of definite rules—must also be in harmony with the principles, but are comparatively few in number. We may class with them the *dicta* of the General Medical Council, for though these latter are State law they concern special instances of conduct forbidden by the ethical rules. Three of them have to do with offences against patients and employers, viz. false certificates, clearly scandalous conduct, and "covering," *i.e.* helping unqualified practitioners, dentists, assistants, and midwives to practise to the danger and deception of patients. The fourth forbids advertising for one's own gain, especially if depreciatory of others.

As to other duties towards patients the text-writers lay down rules on such subjects as the following:—

1. Commissions may not be received from traders for recommending them and their goods, nor given for introductions to patients, nor may testimonials be given as to patent medicines, foods, etc. Indeed, to accept complimentary shares in a patent food company may land a man in a law court.

2. The use of secret remedies, of which the ingredients are unknown, is condemned as being unscientific, and even if not fraudulent, unfairly expensive to patients. Every invention of real value must be made public and not retained for private gain. In past times the inventor of midwifery forceps kept them as

a family secret while thousands of women died for the lack of them.

3. While it is not necessary to give up attendance on a case because it is hopeless of cure, if the patient wishes a continuance, the practitioner may justly refuse to continue attending a patient if he finds that the illness is used as a fraud or imposture, or when other remedies are used than those which he thinks justifiable.

4. No operation should be performed unless for the clear welfare of the patient, and until the risks and objects have been explained to the friends or the patient.

5. The medical man has no right to reveal any private matters which he has learnt in the course of professional work; he is not called upon to act as a detective, and he may not give information to employers or others without the consent of the patient.

As to one's fellow-practitioners :—

6. The patient can change his doctor at will, but a fresh attendant must take care that, if anyone else was attending at the time, such former attendant has been told that his services will not be required. He cannot take over a patient whom he sees in consultation, or as a *locum tenens*, without the full assent of the regular attendant.

7. It is undesirable to pay friendly visits to a person who is under the care of another medical man. If such visits are necessary, the illness should not be discussed, and, still more, depreciatory remarks should not be made as to the doctor in charge.

8. Anyone who acts as a substitute for another must, while doing his best for the patient, take no advantage of his position to injure or prejudice the position of the other or to supplant him.

9. The honorary staff of a charitable institution should take care that well-to-do persons are not allowed to have free attendance there to the injury and loss of other doctors. They themselves must not be compelled to treat as free patients those for whom the State or wealthy companies have undertaken to pay.

10. Medical men may not advertise themselves or their medical writings in lay journals, or allow paragraphs or bulletins to appear mentioning their attendance on great persons (Royalty is usually excepted), nor should they circulate cards giving their change of address except to *bonâ-fide* patients, nor put up plates with their name except on the houses or surgeries where they practise.

General regulations :—

11. Here we find laid down that it is usual to attend medical

men and their families without charge, and even to do operations for them, but they cannot claim it as a right. The wealthy son or widow of a doctor should not expect this favour. Students and nurses are often exempted, and the poorer ministers of religion. When a new practitioner settles in a place he is expected to call on those in practice within a reasonable area.

Most important of all are the rules for consultation. Thus they declare that a patient's wish for further advice should be cheerfully accepted and that it is wise for the doctor to suggest this in many serious cases, and especially when he thinks it necessary to induce premature labour, or if he suspects foul play. In former times it was compulsory for the surgeon in all serious cases. The attendant should not refuse to meet any respectable registered practitioner who is not under ethical censure, though he may point out that the person chosen does not specialise in that line. If the consultation is held at the patient's house, the consultant usually fixes the hour to meet the convenience of the attendant. If the latter fails to appear the consultant may see the patient and leave a sealed letter with his opinion. The attendant first gives the consultant an account of the illness and precedes him in entering the bedroom. The consultant then examines the patient but does not indicate his own opinion while doing so. They then retire alone and discuss the case together. It is well to write down the details of treatment agreed on. The prescription should be signed by both, the attendant first. If they cannot agree the friends should be informed and they may, if they wish, choose a second consultant.

If they agree the friends are called in and the consultant explains the opinion arrived at and answers their questions. While he honestly states the facts of the case, he must be careful not to weaken the influence of the attendant with his patient by unnecessarily depreciating him in any way. Frequently they see the patient again but without any further formal statement. If, however, the patient requires it, the consultant should state the facts to him.

The consultant may not call again or write to the patient except through or at the request of the attendant, nor may he take over the case.

If the meeting takes place at the rooms of the consultant, the attendant should be present or send a letter. In the latter case the consultant answers the patient's questions but sends his conclusions and a prescription to the attendant in a letter. If the

patient goes of his own accord to the rooms of a consultant with reference to an illness for which he is being attended, the consultant should point out to such a patient that it is better that he should write to the attendant. If this is refused he gives his opinion and a prescription to the patient. Some consultants refuse to see a patient without the presence of, or permission from, a medical practitioner. General practitioners called in as consultants are bound by the obligations and have privileges as consultants for the time.

We have given the rules on this subject with considerable detail as showing the care with which the interests of all parties concerned are guarded, but space has allowed only the briefest references to the other ten subjects on which definite rules are recognised.

In conclusion, we find that certain general principles of conduct and a small number of definite rules have been recognised and accepted for the protection of all parties concerned, and that a great number of other matters have been regarded by the text-writers as desirable, or as possible deductions from the principles, or as duties for moral reasons; but that, strictly speaking, they cannot be included among the positive rules of medical ethics. Nevertheless they are important as indicating the general feeling and opinion of medical men to-day. The ideal moralist must allow that the profession has good reason to be proud of the possession of such a body of accepted rules and principles of action, which tend to prevent unprincipled men from acting unfairly towards their fellows, and from exploiting to their own advantage the misfortunes and gullibility of the public.

THE TRAINING OF THE STUDENT OF MEDICINE.

An Inquiry Conducted under the Auspices of the Edinburgh Pathological Club.

XLII.—THE TEACHING OF NEUROLOGY.

By Dr. J. J. GRAHAM BROWN,
Lecturer on Neurology, University of Edinburgh.

I should like, in the first place, to thank the Committee for the compliment they have paid me in asking me to initiate this evening's discussion. In what I have to say I shall endeavour to study conciseness and brevity.

1. *How Neurology is Taught under Present Limitations.*—The conditions attached to the lectureship require that not less than forty lectures should be given, but some of them may be clinical, the number of the latter depending on the amount of suitable material at disposal. The object being the training of men for general practice, it has seemed wise not to show out-of-the-way cases, but rather to devote time and attention to those diseases most likely to be met with. [The speaker here gave details as regards the arrangement of the course, the grouping of the various diseases of the nervous system, and the way in which that facilitated study.] Particular care is taken to demonstrate clinically the methods of examination which should be adopted, and to explain the deductions to be drawn from each symptom as it is elicited.

I would emphasise the importance of explaining to students *how* symptoms arise. It is difficult for them to remember the various symptoms of cases unless they understand the underlying reason for them. If a man knows *how* a symptom arises, he will remember *when* it would naturally arise. In other words, we must stimulate the men to thought, and to exact thought. We encounter many difficulties in this direction. I always at the beginning of the course explain to the men that, so far as I have been able to analyse it, the process of reasoning in the diagnosis of a nervous case consists of three steps. The first step is the diagnosis by physiology—What function is affected? What neurones normally subserve that function? The second step is the diagnosis by anatomy—Where do these neurones lie in the central nervous system? What are the relations of neighbouring structures to these particular neurones? The third step in diagnosis is that by pathology—What are the pathological processes which would be likely to affect the neurones involved? In order to understand these points the student *must* know his physiology; and he does not. He has forgotten it. That is perfectly natural, for it is two years or more since he has worked at it. What does he know about embryology,

biology, or normal psychology? How can he hope to deal with abnormal psychology if he does not know the normal? It simply means that one has to go over physiology again in regard to each particular department of neurology. This takes a considerable time, and involves many more systematic lectures than would otherwise be necessary. It forms the main difficulty in the arrangement of the present course of neurology. If the men came with a reasonable remembrance of what they had previously been taught, the systematic part of the course could be greatly shortened and the clinical part proportionately lengthened.

2. *How Neurology might be Taught.*—In order to teach, a man must learn; he must learn how to teach, and what he is going to teach; he must learn clarity of exposition and accuracy of statement. These things can only be learned by practice. I should like here to urge those assistant physicians who may in future be called upon to give clinical teaching as responsible physicians that only by practice in teaching can such clarity be attained. The medical waiting-room, the out-patient department, affords ample opportunity for acquiring skill in teaching, and one would not like to hear of such opportunity being neglected. They should also do as much teaching in the wards as is possible. Again, no one can be clear in exposition unless he knows the subject well. Thus, a man who is about to teach must keep himself in touch with all the great advances of recent years in physiology and in pathology, with all the modern developments of diagnosis, with all the modern methods of investigation, and with all the modern means of treatment. It involves hard work, of course, but that work must be done. I would end by speaking of what I should like to see—perhaps the ideal method of teaching. I am afraid it is a counsel of perfection! But limiting myself to neurology, and leaving medicine aside, what I should like would be—taking each of the groups of nervous disease such as I have described—that the men who are going to study a particular group clinically should have a lecture or two on the physiology of that group, on the pathology of the neurones concerned in it, and on the therapeutic relations of that group, along with a description of the general clinical aspects of the group and the actual causes of disease.

There is, too, the broader question, with which I close. Edinburgh is a great medical school. It might be a much greater one. We have, I believe, a knowledge that is far-reaching, but we do not mobilise it. It is impossible for any one man to know all the departments of clinical medicine, of physiology, of pathology, of bacteriology. But one would like to see the whole weight of knowledge of the school converged and mobilised upon those important questions of clinical medicine which arise from time to time and which urgently call for solution.

XLIII.—NEUROLOGY AND THE MEDICAL CURRICULUM.

By EDWIN BRAMWELL.

THE purpose of these discussions is, I take it, to aid the Committee of the Club in arriving at conclusions as to the time which may with justice be allotted to each subject in the curriculum, and as to the manner in which that time may be best spent in the interests of the student.

Those of us who have been invited to contribute papers as a basis for discussion are no doubt expected not only to express opinions, but, if possible, to formulate positive suggestions which may prove of service to the members of the Committee when they come to consider the co-ordination of the curriculum as a whole.

In introducing my remarks I would emphasise the facts that this is primarily an undergraduate school, that the majority of our students ultimately intend to practise medicine, and that the life-work of the practitioner essentially consists in the recognition and prevention of disease, and in the treatment of diseases and of the patients who suffer from them. Consequently, our first aim must be to produce, not specialists, but the highest possible average standard of practical efficiency among our graduates. This is *the* problem to which I propose to confine myself to-night. When the question of post-graduate teaching comes up for discussion, I may have an opportunity of referring to my views as to the question of more advanced teaching in neurology which I think should be provided. The interesting suggestion of Mr. Miles that an Honours course for students might be combined with post-graduate instruction seems to me to open wide practical possibilities.

Neurology is the most comprehensive of the more special branches of medicine. The examination of the nervous system is more difficult than that of any other system of the body, and its affections more varied. The subject is so large in relation to the time available for its study that the teacher is constantly called upon to curb his inclinations and refrain from discussing clinical rarities and scientific facts and theories which will be of little value to the student in his after-career. In other words, he must always regard his subject from the standpoint of the future needs of those he is teaching, and must aim at a sense of proportion regulated by these needs.

I think I may say, without fear of contradiction, that the student's practical knowledge of neurology on graduation, even as regards the commoner symptoms, physical signs and diseases, is of a very low order compared with his knowledge of other departments of medicine. That any student at the present day should be permitted to graduate

who cannot, for instance, correctly examine the pupil, the plantar reflex, or the fundus oculi, and who has not a clear idea of the well-known abnormalities these present and of their significance, is inexcusable.

What should be expected of the student? Our aim, in my opinion, should be to give the student a good practical knowledge of (1) the examination of the nervous system; (2) the significance of the more important symptoms and physical signs; (3) the commoner diseases which he will meet with in practice, their diagnosis and treatment; and (4) the leading features which serve to distinguish organic from functional diseases; while (5) he should receive instruction regarding the management of the neuroses and minor psychoses—an aspect of neurology which in my student days was barely touched upon, though these cases constitute by far the majority of the nervous affections with which the general practitioner has to deal.

I now come to the second part of my paper, in which I put forward suggestions which, if carried out, would, I am satisfied, tend to elevate the standard of practical knowledge among our graduates. I would propose :—

Firstly. That the Professor of Medicine might with advantage relegate the *systematic* teaching in neurology to the university lecturer in that subject and any other teachers who choose to give qualifying courses. The university lecturer would thus be directly responsible for the standard of knowledge expected of our graduates, which he is certainly not at the present time. This would, of course, in no way interfere with the inclinations of physicians who choose to give cliniques upon nervous cases or deliver lectures on neurological subjects.

Secondly. I would replace the systematic lectures on neurology as far as possible by a series of demonstrations upon the methods of examination and the commoner disorders of the nervous system, such as I shall presently describe.

Thirdly. I am of opinion that there should always be one question in the final examination upon a neurological subject, and that one of every five or ten students should be examined clinically in neurology.

All lecturers are apt to claim an undue period of time for the teaching of their special subjects. I trust when I suggest that thirty hours be devoted to the series of demonstrations to which I have above referred, and a further ten hours to demonstrations on the examination of the nervous system and the significance of physical signs, that my claims will not appear excessive. In addition, the student might, I think with advantage, be obliged to attend, say, on ten occasions when the lecturer is examining neurological out-patients at the Infirmary, for he would thus be afforded additional opportunities of observ-

ing the methods of dealing with patients suffering from functional disorders.

Let me now briefly describe a method of teaching by clinical demonstration, which I would advocate might with advantage supplant the systematic lectures on neurology. Some ten years ago I gave two series of thirty demonstrations of this kind and proved the feasibility of the method. The advantages of this method of teaching are that the student, in whom one assumes no previous clinical knowledge, is taught to observe and to reason that he learns something of the method of verbal and physical examination, and that one can, with a patient as an illustration, give him a vivid picture which cannot, I think, fail to produce a more striking visual impression than any verbal description.

I commenced the course in each instance by bringing into the lecture-room a case of ataxic tabes. Assuming no clinical knowledge on the part of the students, I ask one of them what he observes. Probably he is struck by the unsteady gait. I then describe the gait or ask a student to do so. I next proceed to test the power of the individual muscles against resistance and demonstrate that the difficulty in walking is not due to any muscular weakness. I then demonstrate that when the eyes are closed the patient has greater difficulty in maintaining his equilibrium than when they are open, and ask for a possible explanation of this phenomenon (Romberg sign). I then demonstrate that there is a loss of sense of position in the lower limbs, indicate the manner in which this defect is elicited, and correlate it with the unsteadiness in walking, making at the same time a few remarks with regard to equilibrium in general and indicating diagrammatically on the blackboard the course of the fibres which subserve these impulses.

In connection with the ataxia I demonstrate that the knee-jerks are absent and point out the manner in which these reflexes are to be examined. After a few remarks upon the knee-jerk I proceed to show the hypotonic condition of the muscles, say something regarding muscular tone and its significance, and indicate the manner in which hypotonia is to be brought out.

The pupils are next examined and the significance of inequality or irregularity, if present, referred to. The student is shown how to test the light reflex, and a few remarks made indicating the significance of the Argyll-Robertson pupil.

Any defect of sensation is noted, together with its distribution and features.

After exhausting any obvious signs, I ask the patient of what he complains, and obtain, in his own language, a description of the lightning pains, for instance. One next asks him leading questions in order to obtain information regarding symptoms to which he may not

have directly referred. I then elicit, if possible, a history of syphilis; question the patient as to secondary symptoms; examine the penis for the presence of a sore, and refer to the value of the Wassermann reaction and the examination of the cerebro-spinal fluid.

After the patient has left the room I dictate briefly as vivid a clinical picture as I can of the case we have just examined. I then proceed to give a brief systematic *résumé* of the symptomatology of the disease and refer shortly to the morbid anatomy, illustrating my points, it may be, by diagrams and lantern slides.

The pathology, etiology, diagnosis, and treatment are in turn considered.

Finally, in the courses to which I have referred, I showed several cases presenting different symptoms—cases in which there was no ataxia, or in which optic atrophy, gastric crises, an arthropathy, a perforating ulcer, pronounced bladder symptoms, associated general paralysis, and aortic disease were present.

After considering tabes, I then demonstrate cases of poliomyelitis, progressive muscular atrophy, pressure paraplegia and so on, in succession, dealing with each disease in a similar manner. Having shown examples of the more common diseases of the spinal cord, my next endeavour is to give a brief *résumé* and classification of these various affections. The commoner affections of the peripheral nerves, the diseases of the brain, and functional affections are dealt with, so far as possible, in the same way.

The last ten hours of the eight weeks' course I would devote to a series of demonstrations illustrated by clinical cases in which neurological methods and the routine examination of the nervous system are demonstrated and the clinical significance of physical signs discussed in some detail. The student is, in my opinion, in a better position to appreciate a course of this kind as a sequel to, rather than a precursor of, the demonstrations on the commoner diseases of the nervous system which I have described.

In conclusion, I trust that these brief remarks have convinced you of the value to the student of this method of teaching, of the feasibility and efficacy of which I am personally satisfied, as a foundation for personal work in the wards, which, of course, it is in no way intended to supplant.

XLIV.—PSYCHOLOGY AND THE MEDICAL CURRICULUM.

By BERNARD HART, M.D., Physician for Mental Diseases, University College Hospital, London; Lecturer in Psychiatry, University College Hospital Medical School.

At the present time psychology has no place in the ordinary medical curriculum, and, with one small exception, it has no place in the medical school. The exception is constituted by the fact that in certain universities the M.D. degree may be taken in mental diseases, while other universities have in recent years established special diplomas in mental diseases. In both these cases a knowledge of psychology is required, and it forms one of the subjects of the examination. Most schools, therefore, make some kind of arrangement by which the requisite instruction may be obtained, but in the majority of cases it has to be sought outside the walls of the medical school.

The purpose of this paper is to determine to what circumstances the exclusion of psychology from the medical school is due, to ascertain how far this exclusion is justifiable, and, if it is not so justifiable, to consider what place should properly be assigned to psychology in the curriculum, and to suggest certain reforms by which that end may be achieved.

So far as the first problem is concerned—the determination of the circumstances which have led to the exclusion of psychology—it is not difficult to find an answer. That the doctor has some concern with the mental aspects of his patient, and that mental factors play a part in the causation of symptoms and in the effect of treatment, has always been obvious. It might reasonably be thought, therefore, that the doctor ought to have some acquaintance with the science which professes to deal with those very aspects and processes, and that psychology should constitute an integral part of his medical education. If we glance at the history of psychology, however, we shall speedily discover why it has not been admitted to the place which should belong to it.

When, in the late eighteenth and early nineteenth centuries, the sciences definitely burst their scholastic bonds and marked out a territory of their own, psychology lagged behind in company with metaphysics, ethics, and other alien neighbours. Even when it began to move it hovered uncertainly on the border, and did not subject itself to the rigid method of observation and experiment which has built up the other sciences into the solid structures we now know. It merely developed into that mass of crude, uncontrolled arm-chair speculation which filled the text-books of the middle of last century. When the doctor turned to such text-books as these he found nothing

to aid him, nothing that seemed to have any bearing on the practical problems of life, nothing that could teach him how to control the mental processes of his patient, nor how to fashion them to the patient's good. Naturally he turned away in disgust, convinced that so far as his patients' minds were concerned he must rely on the vague weapons of "common sense" and "tact," and that academic psychology had no methods to offer him by which he could make these weapons sharp and precise.

It is easy to understand, therefore, that while chemistry, physics, anatomy, and physiology were marshalled into the medical curriculum, psychology was left out, because it had no lesson to teach to the practical doctor; and it must be admitted that so long as it remained the sterile, academic, arm-chair speculation we have depicted it certainly deserved its fate. But during the past half century psychology has undergone a remarkable development, and this development has in recent years been so rapid and far-reaching that it may well be termed a revolution. This great change has resulted from a reform both in its method and its material. On the one hand, arm-chair speculation has been replaced by the method of science, the observation of natural and experimental facts, and the formulation of laws which enable us to explain those facts; on the other hand, this method has been employed to attack the phenomena of practical life and conduct rather than the hazy abstractions which formed the material of the older school. In other words, psychology has been brought into relation with reality, and it has proceeded on the principle that the law of cause and effect holds as much in the psychical as in the physical world, and that the causes and effects of mental phenomena are capable of exact determination. The consequence of this revolution has been that psychology has made giant strides, and, although it has as yet only reached a stage which is infantile in comparison with that attained by many of its sister sciences, it is even now able to offer us knowledge and methods which can be turned to very practical account in the management of our patients.

It will be clear that if these statements are correct the exclusion of psychology from the medical curriculum, however justifiable and comprehensible it may have been in the past, is now open to serious question, and that the time has come when the relationship of the subject to medicine should be submitted to fresh consideration.

In approaching this problem it will be helpful, as a preliminary measure, to determine at what points in the practice of medicine the doctor is confronted with psychological questions of importance in the treatment of his patients. We can then endeavour to indicate briefly how far modern psychology is able to offer practical and effective aid in the solution of these questions. To begin with, it is an obvious error to suppose that the application of medical psychology is limited

to the field of insanity, and that it is a weapon only required in the armoury of the mental specialist. On the contrary, it is clear that mental factors play some part at least in almost every case of illness, and that the doctor is called upon to practise psychological methods every day of his life, however roughly fashioned and home-made these may be. We must therefore consider separately the relationship of psychology to medicine in general on the one hand, and on the other to those departments of medicine in which it occupies a place of special importance. It will be profitable, indeed, to subdivide the ground to be investigated into three parts: (1) general medicine; (2) functional nervous disorders; (3) mental disorders.

Psychology in General Medicine.

So far as general medicine is concerned, the practitioner is confronted by psychological questions in two aspects of his work—etiology and treatment. He finds that mental factors play a part in moulding and modifying the symptoms of disease, and he finds that psychological influences are wrapped up in the methods of treatment he adopts, and constitute important elements in the success or failure of that treatment.

The etiological significance of mental factors in general diseases is by no means negligible. It is clear that the symptoms of disease are coloured in widely different tints according to the character and temperament of the patient. A physical disturbance which causes overwhelming distress to one patient may be represented as a mere triviality by another, and to estimate correctly the objective magnitude of the disturbance this difference in the subjective attitude of the two patients must be taken into account. Again, the psychological characteristics of the various phases of life exercise a marked effect in colouring any diseases which may arise. The child, the adolescent, the old man, the pregnant woman present us with clinical pictures of disease, modified not only by the physiological conditions which accompany these periods, but also by the mental characters which belong therewith. Emotional influences, the results of all sorts and kinds of mental disturbances, may profoundly affect the functioning of various organs and thereby alter materially the symptoms produced by disease of those organs. Mental preoccupation with physiological processes, especially with those belonging to the digestive system, may cause a considerable modification in the processes in question, and it is well known that similar results may be brought about by the action of suggestion. These three latter factors—emotional influences, mental preoccupations, and suggestion—are of predominant importance in the causation of certain functional nervous disorders, and will be dealt with from this point of view in the following section. It must not be forgotten, however, that they play a part, although only a minor one, in

fashioning the symptoms produced by diseases of unquestionably organic origin.

If these statements are accepted, it follows that some knowledge of psychological processes may be required in order to estimate correctly the etiological factors in any disease, and the only question at issue is whether modern psychology is able to provide us with that knowledge. The answer which may fairly be given is that psychology can give much help in certain respects, very little in others. Character and temperament, and their action, are still rather nebulous and inexact conceptions, and our present knowledge can offer little to the physician that is capable of being turned to practical use. The same statement applies, though in a less degree, to the psychological characteristics of the various phases of life. In both these cases the advance of psychology should promise a rich harvest in the future, but its immediate practical fruits are comparatively insignificant. So far as the remaining factors mentioned in the previous paragraph are concerned, however, the position is decidedly different. A considerable body of exact knowledge already exists concerning the action of emotional influences, mental preoccupation, and suggestion, and some acquaintance with that knowledge can hardly fail to be of value to any practising physician.

Turning now to the question of treatment, the part played therein by factors of a psychological order is still more obvious. The character and temperament of the patient again make their appearance as important, though as yet somewhat indeterminate, elements. On the side of the doctor we have to deal with such influences as "personality," "bedside manner," and so forth. These are also somewhat indeterminate, but a little technical knowledge of psychology can give considerable help in fashioning them to the needs of the patient. Emotional influences and suggestion are all-pervading forces which inevitably attach themselves to every form of treatment and very profoundly affect the result. In certain departments of therapeutics, particularly in the use of drugs, electricity, and hydrotherapy, these influences are so apparent that it seems wholly unjustifiable to leave the student without any exact knowledge of their action, if that knowledge is obtainable. Without it he must either rely upon the uncertain light afforded him by common sense, or he must develop into the cruder type of practitioner whose treatment is based upon a blind acceptance of text-book statements, and a pathetic ignorance of the fallacy of *post hoc ergo propter hoc*. In the treatment of every case emotional influences and suggestion must necessarily play some part, although the practitioner may be absolutely unconscious of their action. If this is so, then it is surely better that he should use them consciously and deliberately rather than blindly and ignorantly. He should at least be taught that they are forces which actually exist, that they are now capable of fairly precise

estimation and employment, that emotional influences in therapeutics are not confined to cheering the patient up, and that suggestion has a wider field than the giving of bread pills.

Psychology and Functional Nervous Disorders.

In the department of medical practice which we have so far considered—that of general medicine—the *rôle* of the mental factor, however significant it may be, is at most of subsidiary importance. In functional nervous disorders, however, it occupies a very different position. It is no longer a minor modifying influence, but a predominant causal element.

Since the time of Charcot the view that functional nervous disorders, hysteria, neurasthenia, and other allied conditions are of psychogenic origin has gradually become more and more widely accepted, and the experience gained during the war has tended amply to confirm it, for the war has brought in its train a vast crop of these disorders, loosely grouped together under the popular term of "shell-shock," disorders identical in every essential respect with the hysteria and neurasthenia with which we have long been familiar, though coloured, of course, by the peculiar circumstances of their origin. The urgent problem which has thus arisen in recent years has forced attention to the questions of etiology and treatment, and the consensus of opinion amongst investigators in every country has been that these conditions are due to a chain of causation in which mental factors play the predominant part, and that psychological methods of treatment provide by far the most efficient means for dealing with them. Moreover, this war experience has enabled us to obtain a more exact knowledge of the mechanism by which psychological processes may produce symptoms of disease, and to make more precise and accurate the methods by which they may be attacked.

It has been pointed out that these war cases are identical in every essential respect with the psychoneuroses of civil life, and it is a simple deduction that the methods which have proved to be so efficient in the former should be of value in the latter. Now the psychoneuroses of civil life constitute a department of medicine that cannot be left to the exclusive care of the specialist. They are far too widespread and ubiquitous, for every doctor can bear witness to the considerable proportion of his patients which fall into this category. It would seem reasonable to require, therefore, that the general practitioner should have at least an elementary acquaintance with the etiology of these disorders, and that he should not be left with the sterile idea that sending the patient for a sea voyage or a rest cure exhausts all the possibilities of treatment. Again, this knowledge is

of fundamental importance from the point of view of prophylaxis, for there can be no question that a great number of cases of functional nervous disorder are confirmed and prolonged by the erroneous methods of treatment to which the patients have been subjected.

Psychology and Mental Disorders.

That a knowledge of psychology is necessary for the understanding and treatment of mental disorders may be accepted as an obvious truth. It may nevertheless be questioned whether its importance here is any greater, or even so great, as in the functional nervous disorders we have just considered, for in certain forms of insanity—general paralysis for example—although the mental symptoms may dominate the clinical picture, the chain of causation is composed almost entirely of factors of a physical order. The essential structure of the disease depends upon the lesions produced in the brain, and it is doubtful whether psychological processes have played any part at all in the history of those lesions. All that psychological processes have done is to colour the symptoms in particular tints and shades. In the case of many other types of insanity it is still an open question how far their origin is analogous to that of general paralysis, or how far mental factors have played an active part in the chain of causation. The paradoxical statement might indeed be made that while functional nervous disorders are certainly of "mental" origin, some mental disorders are certainly, and many others probably, not of mental origin at all. However, although these considerations may give rise to some interesting reflections concerning the possibly greater practical importance of psychology in the one department of medicine rather than in the other, it is certainly indubitable that a knowledge of psychology forms a necessary part of the equipment of the psychiatrist. The only question which concerns us here is how far mental disorders should be left entirely to the specialist, and how far the general practitioner must take them into account. My own opinion is that in the main they must be handed over to the specialist, for the general practitioner has neither the time nor the opportunity to acquire that degree of knowledge which is alone of practical value. For the latter some acquaintance with the subject is of course essential, but it should be rather an acquaintance with broad general principles than with a mass of text-book details which cannot fail to be sterile unless illuminated by adequate clinical experience. These broad general principles will enable him to recognise mental disorder in its early stages and to learn something of the therapeutics by which they should be met. And this amount of knowledge will necessarily involve at least an elementary grounding in practical psychology.

The Place of Psychology in the Medical Curriculum.

We may now attempt to summarise the position so far reached. We have found that mental factors enter into every department of medicine, and that some knowledge of the action of these factors is a necessary adjunct to treatment. In certain special departments mental processes assume a position of dominant importance. In one of these—functional nervous disorders—an acquaintance with practical and technical psychology is absolutely essential to any adequate understanding of causation and treatment. A detailed and extensive knowledge can only be expected from the specialist, but these conditions are so widespread and bulk so largely in the practice of every doctor that some equipment in the subject must be demanded from the general practitioner. In a second special department—that of insanity—a knowledge of psychology is also essential, and the general practitioner must at least be sufficiently grounded therein to enable him to recognise and appreciate the real significance of the early symptoms of mental disorder.

If these statements are accepted, it will be clear that every medical student should receive a certain amount of instruction in psychology and psychopathology, and that the absolute omission of these subjects from the curriculum can no longer be justified. The lack of this instruction is responsible for the narrow and crude materialistic conceptions, covered with the dust of the mid-nineteenth century, which still linger in the mind of the present-day student, although they no longer have any place in the structure of modern science. It is responsible for the floundering of the average practitioner when he is faced with problems where mental factors are concerned, for his feeling of helpless impotence when he has to deal with functional nervous disorder, and his vague conception of mental disease as an inexplicable phenomenon only to be met by purgatives, change of air, and the attentions of the relieving officer. It has grave indirect consequences, moreover, in that the student is given no adequate foundation upon which special knowledge may later be built. Hence there is no avenue of approach by which he may subsequently proceed to post-graduate study in the special departments of functional nervous disorder and insanity. The entry to these special departments can only be accomplished by a leap, for which there is no preparation in the ordinary curriculum, and the natural result has been that post-graduate study in such subjects is starved because the idea of undertaking it simply does not enter the mind of the student as a possible development of his medical course.

Provision must therefore be made for the teaching of psychology and psychopathology in the undergraduate curriculum, while more advanced courses should be available for those wishing to undertake post-graduate study in the special branches of functional nervous

disorder and insanity. These latter courses must be so designed that they follow as a natural further development of the knowledge gained by the student during his undergraduate career.

We are now in a position to consider what definite suggestions may be made as to the scope and character of the teaching required. As the necessities of the undergraduate and post-graduate will naturally be very different, it will be desirable to deal with these two problems altogether apart from one another.

Scope of Teaching in Undergraduate Curriculum.

Although it seems clearly necessary that the medical student should acquire some knowledge of psychology and psychopathology, the actual introduction of these subjects into the curriculum is fraught with many difficulties. The curriculum is already overloaded, and any proposal to increase the student's burdens by the addition of new courses must naturally be approached with extreme circumspection. Otherwise the mental indigestion, from which every student inevitably suffers with things as they are now, will be rendered more acute, and the reform we are bringing forward will defeat its own object, because all assimilation of the nutriment provided will be impossible. It is very necessary to preserve a proper sense of perspective and to guard against the danger, to which every teacher is only too liable, of regarding one's own particular subject as the corner-stone of the temple. It is indeed probable that the solution of these difficulties cannot be achieved so long as the education of the medical student is conducted along its present lines, and that the problem will only be satisfactorily met when the radical reform of the whole curriculum, which is now becoming clearly foreshadowed, has emerged on to the stage of practical politics. However, some answer to the question must be attempted, and it will perhaps be best to consider, firstly, how the study of psychology and psychopathology may be introduced into the present medical course, and, secondly, to indicate briefly what position it would occupy in the reformed curriculum of the future. It must be clearly understood that the scheme put forward is only sketched in outline, and that it is purely tentative.

It would seem advisable to divide the teaching of the subject into two periods—an earlier course to be given during the second or third year, and a later course to be given during the fourth or fifth year.

1. The first course should be devoted to instruction in the general principles of psychology and psychopathology. Academic psychology, with its minute analysis of sensations, perceptions, judgments, and so forth, should be reduced to the minimum possible, and attention mainly focussed on the acquirement of knowledge directly bearing on the

problems of real life, and likely to be of practical value to the doctor. The student must learn that the law of causation holds as much in the psychical world as it does in the physical, and that he must regard the mental phenomena of his patients as problems requiring a scientific explanation, just as he regards whatever physical phenomena they may display. He must learn something of the causes responsible for our thoughts and behaviour, of their mode of action, and of the laws to which they are subject. Here will be included some understanding of the nature of instinctive processes, emotions, mental conflicts, suggestion, and so forth, and of the effects which they are capable of producing. The goal ever to be held in view is to give the student knowledge which will enable him to appreciate why his patients think certain things and behave in certain ways, and which will teach him how the behaviour and the thoughts can be modified to the benefit of the patient. Stress must be laid upon the intimate relationship which certainly exists between mind and body, whatever philosophical view we may hold as to the precise nature of that relationship, and the student should learn to regard man as an organism which adapts itself to its environment by modes of reaction in which both mental and physical factors play a part. This will naturally involve a close correlation with physiology, and for this reason the course would seem best placed in the third year of the curriculum, when some knowledge of physiology has already been acquired and its study is still being pursued.

2. The later course will be mainly concerned with the application of the principles learnt in the preliminary course to the problems of general medicine, and in particular to those special departments of medicine in which psychology and psychopathology play a predominant part. Here the student will be taught how disease may be influenced by mental processes, how such factors as emotion and suggestion may modify the symptoms presented by the patient, and how these factors may be controlled and utilised as therapeutic agencies. Secondly, this course will include elementary instruction in the psychological mechanisms underlying functional nervous disorders, so that these conditions need no longer present to the practitioner an incomprehensible and intangible puzzle. Finally, the psychological aspects of insanity will be dealt with, of course in close correlation with the physiological and pathological aspects of the subject. Both here and in the case of functional nervous disorders the teaching will naturally be associated with clinical instruction in the out-patient department and in the wards. This course will, therefore, evidently fall into the fourth and fifth years of the curriculum.

It is not suggested that there should be any extension of the psychiatry course now given. It has always seemed to me impossible for the student to acquire any useful knowledge of the details of

insanity in the time and with the material at his disposal, and I am of opinion that the time would be far better spent in learning broad and fundamental principles rather than in a detailed study of mental diseases and differential diagnosis. These broad and fundamental principles would naturally be included in the course sketched out above, and in this way the student would gain a vastly more comprehensive view of the essential foundations of the subject and of its relationship with other departments of his work. Obviously some attention would need to be given to the practical problems in dealing with insanity which are likely to confront the practitioner, but these are really dependent much more on a knowledge of general principles than on a minute acquaintance with the different types of mental disease. The legal aspects of insanity, methods of certification, and so forth, might well be left to the department of forensic medicine, where they properly belong.

I will make no attempt to decide what place should be given to psychology and psychopathology in the examinations. This is clearly a subsidiary matter, dependent upon the precise shape into which the courses suggested above are finally fashioned. To ask for separate papers in these subjects would indicate a lack of perspective, and an occasional question in the physiology and medicine papers would probably meet all that is required.

Some such scheme as has been outlined would seem to be the only way in which psychology and psychopathology can be introduced into the present-day curriculum. It involves the addition to the student's burden of new subjects, new courses, and new teachers, and the justifiable objections to which such a proposal must inevitably give rise have already been mentioned. It has been indicated, moreover, that these objections can probably only be met by a radical reform of the whole curriculum, and we may now turn to the consideration of the bearing of this reform upon our subject.

The reform which one has in mind and which has already had many advocates consists essentially in a greater co-ordination of the means of education, and in constantly keeping in view the real goal of that education—the manufacture of an efficient practitioner. By co-ordination it is hoped to get rid of the system which throws subjects into the student's mind, leaving them to settle into their proper places and relationships as best they can. These subjects must be co-ordinated into a homogeneous instruction, which will finally qualify the student to deal with certain phenomena. Now these phenomena, which constitute the field of activity of the doctor, are the behaviour of man as an organism, which reacts in certain ways to its environment, and whose reactions are capable of being influenced by certain methods. This conception would seem clearly to be the foundation on which medical education should be built, and its mere

postulation answers sufficiently the question as to whether psychology should play a part therein, for psychological factors obviously enter into the behaviour of man as an organism, and into the methods by which his reactions are capable of being influenced. In other words, they must be taken into account both in etiology and in therapy. But they should be taken into account not as an isolated subject pitchforked into the midst of an ill-digested mass of other and apparently disparate subjects, but welded into their proper place and perspective in the structure of the course, and correlated at every step with the material and conclusions of the sister sciences. No doubt the fundamental and elementary principles of psychology and psychopathology must be taught in a separate course, as is now the case with physiology, anatomy, and chemistry, but we may hope that the medicine, materia medica, and therapeutics of the future will utilise and co-ordinate the weapons provided by psychology as much as, and in association with, the weapons provided by physiology, anatomy, and chemistry.

Scope of Teaching in Post-graduate Curriculum.

Post-graduate teaching lies outside the main thesis of this paper and will therefore only be dealt with very briefly. There are two departments into which psychology will naturally enter—functional nervous disorders and psychiatry.

So far as functional nervous disorders are concerned, post-graduate teaching must provide for an amplification and extension of the elementary treatment of the subject furnished by the undergraduate course. This will involve a more advanced course of psychology, close correlation with associated teaching in neurology, and clinical instruction in the out-patient department and the wards. The various methods of psychotherapy will naturally receive full attention.

The provision of adequate post-graduate teaching in psychiatry is dependent upon certain urgently needed reforms, for which there is already a rapidly increasing demand, and which we hope will shortly emerge on to the stage of practical politics. These reforms, which require alterations both in the law and in the constitution of the medical schools, cannot be given any adequate consideration here, but we may very shortly summarise the actual state of affairs and indicate the obvious direction for improvement. At the present time, although provision is made for the housing and treatment of advanced cases of insanity in asylums, which for comfort and care are among the first in the world, there is hardly any provision whatever for the treatment of early cases of mental disorder; that is to say, for cases in those stages when treatment evidently has the best chance of success. For these early cases, except for those with considerable means, practically

no institutions exist where treatment can be obtained, and the only course available is to wait until the patients become sufficiently bad to be certified. Then the State will willingly take charge of them, house them, and give them every care and attention. Such a situation would seem incredible, but, except for one or two isolated places where some attempt has been made to face the problem, the above description is literally true. Some of the general hospitals have in recent years established out-patient departments in which early cases of mental disorder can receive advice and some treatment, but out-patient treatment, valuable though it is as an adjunct, is hopelessly inadequate for patients of this type. Moreover, the present condition of things involves almost a complete divorce between the teaching of psychiatry and the main body of the student's education, and offends absolutely against the co-ordination and integration which is so clearly desirable. The remedy is evidently the establishment of clinics in close association with the general hospitals and medical schools, in which cases of early mental disorder can receive proper treatment. There are difficulties in the way of this reform, difficulties both of legal and other character, but they are certainly not insurmountable, and the need is so urgent and obvious that only understanding and energy are required to overcome them.

These clinics will provide for treatment, for organised research, and for teaching. The courses of instruction will include psychiatry, psychopathology, pathology, clinical and laboratory work, all of which should be developed in as close association as possible with the other departments of the medical school, and, finally, the clinic must also make the necessary arrangements for the undergraduate courses which have already been dealt with.

The object of this paper has been merely to sketch out in the broadest possible lines the place which psychology should occupy in the medical curriculum. No attempt has been made to construct a full scheme of the courses of instruction, the number and distribution of lectures, nor any of the other details which must necessarily be settled before any scheme is actually put into practice. It is felt that details of this kind can be better determined by a conference rather than by an individual paper. Moreover, we are dealing not with the improvement of a subject which already has a place in the student's education, but with the introduction of a totally new subject, and I have therefore conceived it necessary to devote consideration rather to the arguments which support the addition of psychology to the curriculum than to the question of the precise shape which it should assume therein.

XLV.—THE TEACHING OF MENTAL DISEASES IN EDINBURGH.

By GEORGE M. ROBERTSON, M.D., F.R.C.P., Lecturer in the University of Edinburgh and Physician of the Royal Asylum, formerly Lecturer in the Royal Colleges School of Medicine.

It is assumed that the instruction to be given in this subject to medical students is only such as should instil the knowledge required by a good general practitioner of medicine. The medical student has a great deal to learn; he has only a limited time at his disposal for this purpose, and a just sense of proportion must qualify the aspirations of his teachers, who are naturally zealous that their own subjects should not be neglected. General principles, broad outlines, practical management, and the ability to observe symptoms should form the essentials of the course of instruction. The student who wishes to specialise in this subject must engage in post-graduate study, which is another problem.

The importance of instruction in mental diseases in the medical curriculum has long been recognised. In 1826 Professor Alison informed the University Commission that it was desirable to have a professorship on the subject. Fifty years later (1879) a lectureship was actually established, the first and oldest in the University of Edinburgh. No form of illness creates such anxiety in a family as the occurrence of insanity in one of its members. The treatment of no other disease requires so many complicated arrangements to be made. No disease has so numerous and important legal relationships. On no occasion is the advice and help of a medical man more needed or more valued. It has been truly said that a death in a household does not produce so great a disturbance as a case of mental disease.

A few words must first be said on the subject of the preparation required for this course of instruction. The student must have a knowledge of physiology, pathology, therapeutics, and general medicine to acquire a proper grasp of the subject. At least three-fourths of those who become insane suffer from physical disorders. In my opinion the most important and most frequent cause of insanity is bodily disease. Not only as regards etiology but also as regards treatment is this knowledge required, for we treat the mind through the body.

Only a few years ago a knowledge of the above subjects was considered a sufficient preliminary training for the study of mental diseases. The view was then held that by accurate and exhaustive histological and bacteriological research the cause and nature of insanity would at length be revealed. An English text-book on insanity went so far as to observe that all mental symptoms might with advantage

be ignored, and that our attention should be strictly limited to physical signs and symptoms. A revolution has occurred since then. In the interval normal psychology, medical psychology, psychopathology, and psychotherapeutics have made great advances. There are many who now hold that almost all the curable forms and symptoms of insanity are psychogenetic, that their origin can be explained by purely psychological or psychopathological processes, that their cure can be effected by psychotherapeutic means, and that microscopical changes in the brain need not be expected, and that, if found, they do not explain very much.

From the above statement it follows that it is now considered absolutely essential that the medical student, as a preliminary to the study of mental diseases, and, indeed, as a preparation to the practice of his profession, should have a knowledge of psychology. It must be confessed here that in the past the old psychology was of very little use in medicine or in the practical affairs of life. Indeed, a knowledge of it may have been a handicap. During the last generation, however, a new psychology has developed, a medical psychology has been created. A knowledge of these is of great help in giving an insight into the symptoms of insanity, and not of insanity only, but also into abnormal behaviour of all kinds and the conduct of the practical affairs of life.

My first suggestion, therefore, is that a special three months' course of lectures on medical psychology should be provided for the student in the medical curriculum. As this course would not require a knowledge of any medical subject except a limited acquaintance with anatomy and physiology, if even so much, it might be taken at any stage after the first year. It ought to be possible in this special course on medical psychology and psychopathology to include instruction on the principles of suggestion and persuasion, of psycho-analysis, and of the graduated tests for mental defect.

Before proceeding to describe next the arrangements for the lectures on mental diseases, I desire here to bring to the notice of the profession the very extensive clinical field of psychopathic disorders that fall far short of actual insanity or imbecility, which practically lies fallow at the present time, so far as the orthodox physician is concerned. The general practitioner comes in contact with these patients, and it is only in the case of the wealthy, or when some social or domestic crisis occurs, that the mental specialist is consulted. These cases are a source of great worry and annoyance to all connected with them, and little satisfaction is derived in dealing with them. They are quite unamenable to medical treatment conducted on the ordinary lines. These are the cases that drift towards or fall into the hands of faith-healers, Christian scientists, and others. Modern psychology throws great light on such cases, and not only will a knowledge of this subject

by the general practitioner help these patients, but it will protect the physician from much worry and introduce him to a fascinating study.

The lectures on mental diseases at the university are at present delivered in the Spring Term of the fourth year of study. For over fifty years they were delivered in summer, and there is no question that the Summer Term is the proper time to hold them. The weather in spring is cold and wet and the afternoons are dark, all of which add greatly to the inconvenience and discomfort of attendance at the asylum.

The present Regulations allow for six systematic and ten clinical lectures. Most importance is, of course, attached to clinical instruction; nevertheless I have found it necessary to give each year a minimum of ten systematic lectures as well as ten cliniques or demonstrations. Two lectures are given each week, and it is a very convenient arrangement to give a systematic lecture on, say, mania or melancholia on the Monday, and to follow this with a clinique on the Wednesday, and then demonstrate cases which illustrate the disorder which I have just described in the systematic lecture. The system of an equal number of systematic and clinical lectures thus works well, and the whole course of twenty lectures fits into a term very conveniently. In order to reduce the size of the class for the cliniques I divide it into two groups, and give a clinique on Friday as well as Wednesday, a half of the class attending each time.

I have lectured on the subject of mental diseases for twenty years. In each successive year I have endeavoured to treat my subject in a more simple and more practical manner. I have limited myself to broad outlines and fundamental principles. I give the essentials, and I do not think it is possible to do so in a smaller number of lectures. It is true I endeavour to cover the whole ground, and I have a good reason for doing so. The subject of mental diseases is not included in the Final Professional Examinations in the University of Edinburgh. There is thus no check on the extent or completeness of the private reading of the undergraduate. In order, therefore, to make certain that no student graduates in Edinburgh who has not had the whole subject of mental diseases placed before him, I make it a point to run over the fundamentals of the entire subject in my systematic lectures.

My distinguished predecessor was very anxious that the subject of mental diseases should form a regular part of the Final Professional Examination. Such a regulation would of course add to the importance of the subject in the eyes of the student, and it would probably increase his industry and attentiveness. This, however, is unnecessary, for in my experience there is no subject in which his interest and attention is more easily aroused than this. It is fresh to him, it is full of human as well as scientific interest, and it is so different from all his other

subjects that the most *blasé* student comes to the lectures and cliniques most regularly, and attends in the most exemplary manner. For my part, I would be satisfied if the university authorities permitted me to withhold the certificate of attendance in all cases of doubt. In an important subject such as this, in which no professional examination is held, I think something more than a bare 30 per cent. of marks in the class examinations should be required, especially if the questions set are simple and straightforward, such as are more suitable for a pass than for a competitive examination.

It is a very grave omission that during the final year, after the student has taken out his course of lectures on mental diseases, he often hears no more on the subject. The subject should, however, be kept fresh in his mind during his final year till he graduates, more especially seeing that it is not included among the subjects of his final examination, by one or two lectures regularly delivered during each term. Such lectures have been given by the physician in charge of the mental wards in the Royal Infirmary and have been appreciated. There is usually clinical material for the purpose. Needless to say that lectures at this stage of the student's career could be made very interesting, useful, and practical, owing to the fact that the lecturer would be free and would not be bound down to a definite course or syllabus. Such a series of occasional lectures for senior students would, in my opinion, be a most useful and excellent conclusion to the systematic course of instruction in the class of mental diseases.

While actual insanity forms the main stem or trunk of the subject of mental diseases, it has associated with it vigorous and important branches, some of which are of comparatively recent growth. Of these, the first to be mentioned is mental deficiency. Owing to recent legislation attention has been directed to this subject, and its great importance has been recognised in connection with education, with immorality, with criminal propensities, and with heredity or eugenics. During all the years I have lectured I have recognised the necessity of instruction in this subject, and Dr. Clarkson, Superintendent of the Larbert Institution, has given each year a special lecture and clinique to my students. It is clear that something more should be done. It would be a great advantage if, in addition to seeing the cases at the Larbert Institution, the clinical material available at the schools for backward and defective children in Edinburgh were placed at the disposal of the teaching staffs of the university and the Infirmary. Such an arrangement might be of mutual advantage. The educational authorities would have their children tested and graded by experts in the psychological department of the university, and advice would be given as to how the patients should be treated by those in charge of the Infirmary cliniques. The instruction of the medical student and his practical

co-operation would naturally form an essential part of this arrangement.

Another important branch or allied subject is what may be termed psychasthenia, which includes all those lesser psychopathic states which fall short of actual insanity. The war has made it clear to everyone what an enormous field there is of functional nervous states, which are essentially mental or of mental origin, whose treatment is mainly mental. The symptoms of these cases, polymorphic in form and often strangely fantastic, are psychogenetic. They may be due to emotional disturbance, states of confusion, or shock. Suggestion may be readily accepted owing to exhaustion of the will power. The treatment of such cases after they have been carefully investigated consists largely of persuasion and encouragement, and the planning of a well-ordered mental life and a normal outlook.

For all such cases, and for the cases presenting the early and slight forms of insanity, there should be created at the Royal Infirmary a psychiatric department with a psychological out-patient department or clinic. Such clinics are in operation in other great medical schools, and it does not take very long for the public to realise the benefits they confer on the community, and to appreciate them. They are consulted in all manner of social and personal difficulties. Thus, for example, parents would bring children giving trouble and showing moral and mental peculiarities. Defective children in the schools might be tested in this department. Patients threatening to become insane or conscious of impending mental disorder would come for advice, and by the provision of this department not only would mental disease be treated in its early and most curable stage, but an opportunity would be afforded for the prevention of insanity.

I shall now conclude with another suggestion. Those which I have already made are modest and none of them very difficult of attainment: that about to be made will require the provision of considerable funds, and, what is perhaps more difficult to achieve, the co-operation of various bodies who are tenacious of their prerogatives, whose interests are not identical. I would suggest that the Medical School of Edinburgh should possess two new institutions or departments, which would be of civic as well as of academic value. The first of these would be neuropsychasthenic wards attached to the Royal Infirmary. The second would be the establishment of an observation, reception, or clearing mental hospital for all the occurring cases of insanity, or the doubtfully insane cases, arising in Edinburgh, Leith, and neighbourhood.

It is, of course, known that there are mental wards in the Royal Infirmary containing a very limited number of beds, and restricted to patients presenting certain symptoms. These wards, judging by modern standards, are not worthy of the city of Edinburgh, or of a great school of medicine. In criticism of them it is sufficient to say

that according to the Regulations no patient who is known to be suicidal is eligible for admission or treatment in them. What is the effect of this restriction? It practically excludes all cases of melancholia—melancholia, let it be known, being the commonest form of mental disorder, the one which is nearest the normal and is the slightest departure from it, the most reasonable of all forms of mental disorder, the one in which the patient has insight into his condition and is conscious that he is sick in mind, in which the patient often voluntarily consults a doctor and even enters an asylum for protection, and a disorder which is practically always recovered from, except in the infirm or aged, provided that he is prevented from committing suicide.

Not only do these mental wards fail to provide accommodation for mild cases of recoverable insanity, but by not separating cases which are frankly insane from psychasthenic cases they diminish their usefulness for the care of the latter. If there is one point on which such cases are sensitive, it is in being regarded as insane. No doubt they dread they may ultimately become insane, and to be treated beside the frankly insane renders them very unhappy.

For the above reason, and because the regulations and provisions needed for the psychasthenic and the frankly insane are quite different in every way, I am of opinion that the psychasthenic wards and the observation mental hospital should be entirely separate establishments or separate departments in one building.

The psychasthenic department could without difficulty be established in or adjoining the Infirmary. For the cases treated here the newer methods of psychical treatment, including psycho-analysis and persuasion, would be employed. In addition to this, however, as it is found that practically all cases suffering from neurasthenia and psychasthenia are run down, and are suffering from chronic infections, ordinary medicinal treatment, including vaccines of the invading organisms, must be employed as well. It is therefore pointed out that this class of patient would provide material for the diagnosis and treatment of the early stages of those mild infections and chronic diseases which at present the medical student seldom sees and is not lectured upon, although in course of time these conditions lead to incurable diseases.

Such a department would be carrying out prophylactic treatment of the nervous system and the mind. This would really be preventive medicine of the most valuable kind, for we all know how unsatisfactory is treatment of such disorders when they become firmly established It is the modern as contrasted with the old ideal of convalescent treatment. Both forms of treatment are, however, essentially the same. In the former we strive to restore health after a minor departure, so as to prevent worse from happening. In the latter we endeavour to restore health after a serious departure from the normal, but how often does

this treatment come too late? It is hoped that the Astley-Ainsley Bequest will be available for the above purpose.

Finally, with regard to the establishment of an observation, reception or clearing mental hospital for all the occurring insane or doubtfully insane cases arising in Edinburgh, Leith, and neighbourhood. The management, regulations, and accommodation for such a hospital would require to be quite different from the psychasthenic department, and would resemble those obtaining in the hospital block of our most modern mental hospitals. The conveniences and advantages of such an establishment are obvious, and such places are being provided in many of the large and progressive cities of the world. The benefits to the medical school are no less apparent. The establishment would require to provide accommodation for at least twenty-four patients of each sex with facilities for future extension. It would also require to have grounds. A site near the Infirmary would be an advantage. The patients admitted should not be under certificate and should only be treated here for a limited time.

The public bodies who would be chiefly interested in a scheme such as this would be the University, the Royal Infirmary, and the Parish Councils of Edinburgh and Leith. The University would be interested on behalf of the medical student, as all the best clinical material in the city and neighbourhood would be collected and would be available for purposes of instruction; the managers of the Royal Infirmary could not be indifferent to any great scheme for the care of the sick in the city of Edinburgh; the Parish Councils would be concerned as by the Lunacy Acts they are responsible financially and otherwise for the care of insane persons who cannot support themselves. It appears to me highly probable that it would ultimately be found that the managers of the Royal Asylum would be the body which might be able to harmonise the conflicting interests and co-ordinate the energies of these various great corporations. I have made the suggestion, and I have not minimised the difficulties of carrying it into effect, but I am not without hope that the day will come in which the whole scheme as here described will be established.

XLVI.—THE TEACHING OF PSYCHOLOGY TO MEDICAL STUDENTS.

By T. A. ROSS, M.D.

First let me thank the Club for the great honour it has paid me in asking me here to-night.

My friend Dr. Traquair was kind enough to indicate what the problems were with which this paper should deal.

1. What is the kind of and how much psychology should be taught

to medical students, bearing in mind that what we wish to produce is an all round, well-equipped general practitioner?

2. To give a sketch of such a course.

3. Are young graduates at present adequately equipped in this respect? The question is not what is a suitable course of instruction in psychological medicine, but how much is necessary for general practitioners.

As medicine grows, the position of the general practitioner becomes one of greater and greater difficulty. Not only should he know all general medicine; but he is urged on all sides to become a specialist in everything. He should keep a small clinical laboratory, do some of his own bacteriology, and not live parasitically on other men's reports, do much of his own surgery, refract eyes, know skins, become a syphilologist, remember his anatomy, his physiology, his chemistry, and of course be such an obstetrical specialist as never to lose a mother or a child. It is impossible. In the cities where there are medical schools, and consultations for rich and poor are easily obtained, he tends more and more to lean on the opinions of others, never tackling any real difficulty by himself. In the country towns he often tries to know all these things and fails to practise any of them well, or else he degenerates into a mere walker in and out of houses. In the cities it is difficult to see a remedy; elsewhere, if the present competitive methods could be got rid of, and the men who live in a district be banded together to do a kind of team-work, each man remaining a general practitioner but adding a specialty, some possibility of good work would probably emerge. General practitioners there must be; a health service run by specialists would be an unspeakable chaos.

Meanwhile the question is, shall we add to the swollen curriculum yet another subject—that of psychotherapy, at once the newest and the oldest of all methods of treatment! The oldest—for much of the alleviation of illness that we doctors bring about is psychotherapeutical, and always has been; the newest—for it is but yesterday that it became conscious and capable of being brought under law with a technique to be learnt.

The common little illnesses that make up a great part of a doctor's daily round—the headaches, the feelings of being run down, of being tired, the depressions, the dyspepsias, the flabbinesses, the poor nights with broken sleep—are, when he looks back on his hospital days, when the world seemed full of interesting things like tabes, and syringomyelia, and pernicious anæmia, very dull, very depressing for the young graduate. There is nothing to find. He examines his patient carefully and systematically, but though there are no signs of disease there are the possibilities of early phthisis and other states which do not show signs for a long time; and while he does his best to reassure without committing himself, the patient does not get well, and after

fair trial goes off to see someone else who has possibly less science but more common sense, and who quickly effects a cure. These common little trifles are very rarely early phthisis, or anything of the kind. Most often they are manifestations of a mild anxiety—they are anxiety neuroses, easily curable in an early stage, but more formidable later; the great care and solemn mien of the young doctor have increased the anxiety, while the other, probably older, man, who has forgotten all his "ologies" long ago, has, in the meantime, learned men and women—has learned how to help human beings. Those who are not cured form the great bulk of the chronic invalids of a practice—the people who are always falling ill, always inefficient, sometimes with symptoms of a grave and anxious character.

These very dull illnesses which at first puzzle the young doctor, and in a very few weeks bore him, and which tend to drag him down into the extremely unscientific person he so often becomes, would, had he only known some elementary psychology, have been of intellectual interest to himself and a source of gratitude on the part of his patient.

And this brings me to the question of what kind of psychology a general practitioner ought to know. But first a word about what he need not be taught very deeply at the outset, and should be discouraged from practising until he has acquired a good deal of experience. I believe that he should be discouraged from practising the clinical methods of Freud, Jung, and Morton Prince—that is, the technique of digging deeply into the unconscious. It is not that these methods have not their value. They have. But it is not necessary that they should be used in the sort of cases which a general practitioner will meet with, except very rarely, in his practice. They are in unskilled hands extremely dangerous, and they are also very fascinating. I take it that surgical teachers would discourage general practitioners from removing the Gasserian ganglion on much the same grounds. We shall return to this later.

The psychology that he should be taught thoroughly is that which was taught by Dubois and by Déjerine. He should learn that emotion is followed by physical symptoms. Just as grief is followed by tears, and merriment by laughter, so horror may be followed by vomiting, tremor, giving way of the knees, actual paralysis, or even the unconsciousness which is called fainting; anxiety, remorse, or the like, may have as their symptoms insomnia, headache, palpitation, feelings of fatigue, anorexia, failure of gastric secretion and motility, and therefore dyspepsia and malnutrition; and a long series of effects—organic now—may follow these last.

The student should learn that just as people do not as a rule weep for long, so none of these other emotional reactions would last long but for an intellectual error of which he will be either the abettor or

the destroyer. Thus, if the patient thinks that this dyspepsia depends on the kind of food he eats, and the doctor furthers this by doing what Austin Flint long ago called "tinkering with the diet," there will no doubt be early success; but the seed of fear and distrust of particular foods will have been sown, and the harvest of increased fear will be reaped later, and the unhappy patient will in time have a long and increasing list of the foods which he cannot touch. The doctor will have taught fear when he should have taught that there was nothing to fear.

Or, full of the knowledge that this and that histological repair in the brain-cells of exhausted animals takes place during sleep only, he may impress unduly on his patient the paramount importance of sleep, and create in this way an anxiety which is renewed every night on going to bed—the anxiety that, unless sound sleep is obtained, something dreadful will happen—the very anxiety that should have been avoided.

Such a patient should be taught that just as these symptoms are started by some depressing emotion, so they are kept up more often than not, not by that originating emotion, but by the fear that the symptoms are those of disease; he should be instructed that their cure depends on getting rid of this secondary fear.

To prevent frequent repetitions of the symptoms or reactions the originating anxiety should be discovered. When this has been accomplished, free discussion of it may help the patient to get rid of it, or to look at it from a different point of view. In any case, even if nothing can be done for it, the knowledge that some person knows and sympathises is curiously comforting; and courage to face the trouble is more easily acquired. Usually it will be possible to manage that it shall be looked at from a new point of view. An anxiety or a sorrow which is kept secret is usually looked at in one way only.

With examples from the other main functions of the body, this then is the kind of psychology that should be taught to the medical student; but to make the teaching effectual in practice, he must be instructed how to get his patients to believe in him and his doctrine. The belief in the physical origin of disease is so strong that the doctor must learn how he is to approach his patient's mind if he is to get a hearing at all. Unless he can get himself believed in he will do nothing. To the whole tribe of the psycho-analysts this is the rankest sort of heresy. Faith is out of fashion. Analysis and diverting the psychic energy into fresh channels are alone the curative agents. To this the answer is that one knows of many cures which were brought about by faith without analysis, and which have stood the test of years, but one cannot conceive of any analysis being carried out where there was no faith.

We want to teach the doctor how to get at the mind of his patients

before the symptoms have become rationalised—become, that is, fixed by reasoning to some external cause, such as the weather, the food they eat, the bracing or relaxing quality of the climate they live in. We want this done before the real cause has slipped into the unconscious or been repressed into it, while it is still conscious, though it may have become mentally dissociated from the symptoms, which are now kept up by the rationalised cause. Our minds are so constituted that we do not like to think that our illnesses are due to our own thoughts or acts. We therefore tend to dissociate our thoughts from our symptoms and to find some external reason for the latter. In this country the weather is certainly the most popular, and it is specially change of weather, no matter which way, that is so potent. As such a change commonly occurs two or three times a day, it is not very difficult to find what is desired.

When the cause has been determined the doctor should be able to help the patient to face it bravely, and then, in most cases without analysis, he will be able to direct the psychic energy without much trouble into more profitable channels; and therefore he should be capable of becoming an agent in promoting for his patient an aim and direction for life. Most of the people who are overwhelmed by the difficulties of life are those who have no ideal to pursue. Such people are found in all classes—in the comfortably off, because they have nearly everything they need; in the poor, because the dull monotony of their tasks has crushed out all idealism.

Students must be taught formally how a sick man should be approached. Jokingly, one who spoke here on another subject said that he supposed a bedside manner had its value. It has; but the bedside manner I should like to see is not very easy to carry out. We do not teach our students how they should acquire the power of getting into proper touch with patients. A most important part of case-taking is getting the history, and a ward is not the best place in which to obtain it. Nothing like a history can be got in the presence of a third person, and the first thing to be done is therefore to endeavour to see the patient alone. Otherwise a full account of even the physical symptoms will not be forthcoming. The patient becomes ashamed of the length of the list. Of psychical causes of symptoms or of psychical symptoms, phobias, obsessions, etc., nothing will be heard. No human being is going to talk of fears, worries, or anxieties in the presence of a nurse or relative.

At present the student sees that the physician always conducts his examinations in public, and he is never told that anything else is desirable; indeed he is sometimes told that if he sees a young woman alone he is running a risk. He may be, but it would be better to teach him that without some risk in this world nothing is accomplished, and he would probably become a better doctor if he were

taught that his reputation may be left to take care of itself, if his only thought is his patient's welfare. In private practice the difficulties are to get rid of the mother of a young lady, and apparently also to send a nurse away wherever one is found. Patients are singularly grateful and communicative if a doctor will show himself master enough of a sickroom to turn a nurse out while he talks to them. Here, then, is a definition. A good bedside manner is the art of eliminating third persons without offence.

The history of a neuropath must be listened to unweariedly once, and if this is done, most of the psychical facts necessary for comprehension will be given voluntarily in a large number of cases, and it is easy to teach how others may be asked for. Do students nowadays get instructions to listen? I remember one teacher telling us we might stuff our ears with cotton-wool, and another saying that histories were only misleading. They may mislead if the doctor takes the patient's diagnosis; if because the patient says he has rheumatism the doctor, instead of examining him, gives him salicylate of soda; but, apart from the doctor being hypnotised by the patient in this way, it is essential for the proper comprehension and treatment of that patient that the doctor should know that he thought he had rheumatism.

Needless to say, complete and thorough physical examination is necessary. Not only must the doctor know the physical state of the patient, but the patient must be made to feel that he knows for certain. Extreme thoroughness here cannot be insisted on too much. But in connection with the physical examination let us hope that the belief that small defects in some organ, like the eye, nose, or uterus, cause symptoms of magnitude, will be allowed to die. Such defects have usually been present all a patient's life, and therefore are unlikely to become suddenly causes of symptoms; and though immediate good effects may follow treatment of them, because of hope which is instilled, that hope is founded on a false premiss, and the after-results are bad.

Having complete possession of the physical and psychical facts, the doctor will usually find that the way of cure is the way of common sense.

All this is obvious, but a few words must be said on something that is not so obvious, but about which some view one way or the other must be stated, viz. about psycho-analysis, *i.e.* the exploration of the unconscious. I do not propose to engage in any argument about the question of the existence of the unconscious mind. Anyone who doubts that he represses disagreeable facts so that he becomes unconscious of them and cannot recall them need only analyse a few of his own dreams to get enlightenment. The question is how far is the unconscious the cause of symptoms. Experience teaches that it is so in most cases of long standing of the kind that we have mentioned, and in cases where there are psychical symptoms such as phobias, obsessions, feelings of

unreality, etc., but that there is also a large group where the symptoms do not depend on what is really unconscious, in the sense that the causal ideas cannot be elicited by ordinary conversation skilfully conducted. This is the group which the general practitioner should know about and be able to treat. If a case is in, or has lapsed into, the group where the cause of symptoms cannot be so elicited, it will usually be beyond his power to deal with it. The repressed idea or ideas must now be sought for by the exploration of the unconscious. The followers of Freud would have us believe that in all cases it is a repressed unconscious complex of ideas that is the cause of an anxiety neurosis, and further, that this complex is always of a sexual nature, but there appears to be little doubt that both statements are erroneous. With the first I have already dealt; as regards the second, if the analyst starts his analysis intending to find sexual repression, he will find it. The possession of the instinct is normal. It is normal to repress it, therefore it is always there. A sexual memory which has been repressed may cause symptoms, but then it must be shown that it was a real cause, not merely a concomitant circumstance. The thorough Freudian does not care how many other complexes of obvious causal value for the case in hand he unearths. He goes on till he finds the inevitable sexual repression which may be, and likely is, normal, and not the cause of symptoms. In this way much needless distress is caused to the patient. This kind of practice has made the whole subject of psycho-analysis stink in the nostrils of the non-German peoples; but apart from Freud's predilection for this particular point, and for the correlated doctrine of fixed symbols, his technical methods are of the utmost value for the exploration of the unconscious. He postulated that all psychology was individual, and this doctrine seems eminently sound. The interpretation of dreams was held to be the best method of approach to the unconscious, and the events of the dream were symbolic of the repressed thought or complex. A large number of the things that people see in their dreams are common to them all. For example, water is a common constituent of dreams. Now, if all psychology is individual, the symbolic significance of water in a dream will differ for everybody; and in dreams that I have investigated it has had such different significations as going to France and being killed in the war, and the drowning of a patient's brother forty years previously. In each case the explanation fitted the particular trouble. Freud, however, with his infatuation for sexual explanations, made water, along with a host of other things, a sexual symbol always. It is extraordinary that he did not perceive that by doing so he undermined the whole foundation of his psychology; for it rests on the one great conception that because psychology is individual, it is worth investigating. If one may venture to do anything so unscientific as to make a deduction from modern philosophy,

this is what one would expect, viz. that our psychology would be individual. The difference between non-life and life lies, according to Bergson, in the fact that the former is strictly subject to mathematical law, and therefore its every action is foreseeable; the other is not, and of it nothing of the future can be foretold. Such a future entails an individual, an unexpected past.

Of the various schools which have sprung from Freud the same may be said; the methods are not for the beginner.

Morton Prince's method of exploring the unconscious by hypnotism is of great scientific interest. He has probably demonstrated the existence of the unconscious mind with more certitude than any other investigator; but the danger of making a patient dependent on his doctor, of making him incapable of standing alone, appears to me to be very considerable. He has been able to show that the unconscious is not forever occupied with the sexual.

But, as has been said, commonly the complex which originated the symptoms is not in the unconscious, though often dissociated from the symptoms; and by careful inquiry, by getting the patient to think back, it can be obtained without the exploration of the unconscious. At the same time, some description of those methods should be given to the student, though he should be told that in general practice they will hardly ever be necessary, and that as the technique is difficult to acquire, and needs much practice, he had better not try them himself.

When should psychology be taught? Not till the student has been grounded in ordinary clinical medicine. Physical symptoms, physical signs, and physical effects must be the first study, or we shall create only a lot of slipshod faith-healers who will lack the enthusiasm of the genuine Christian scientist. And here I would plead for the teaching of more courage in the stating of the physical part of the case. Doctors who make slovenly diagnoses like "weak lungs," D. A. H., and the like are the greatest makers of anxiety neuroses. A doctor should have the courage to say that an organ is healthy or not healthy, or that he does not know. These diagnoses are given for one of two reasons: first, the doctor wishes to have been right whatever happens; but even if the present illness passes, that patient has been led to believe that he has a weak organ, and that therefore he must always take care, and a man who is taking care is ill. The second reason is the desire to save the patient anxiety when he has something grave. I am convinced that a statement of the kind only makes more anxiety. Most people can face open trouble, few trouble that is badly smoothed over. It is not possible to do it well for long.

The whole of these subjects cannot be taught clinically, and as it would be well that some teaching should be given in certain aspects of general psychology such as the effects of habit, the nature of the

instincts, etc., a short course of lectures is necessary. I think about twenty might do. If the student has, as I gather, too many lectures already, surely much of the useless information about drugs and most of the practical class of materia medica might be abandoned. Would it be an exaggeration to say that 60 per cent. of what is now taught in that subject by lectures and practical work might be dropped? It is not used in medicine and has no cultural value. Why teach a man how to make pills any more than scalpels?

Finally, my last point was to be whether the young graduate is at present adequately equipped in this subject. There is no sign that he, nor that the profession as a whole, despite the immense literature, is imbued with any real psychological knowledge. When it is, we shall be saved from those public exhibitions of collective folly that we give every few years—exhibitions that show that if the laity are gullible it is nothing as compared with our own gullibility. The profession will not then hail as Heaven-sent panaceas crazes like the sour milk craze, the tuberculin craze, the high-frequency craze, the appendicectomy craze. Till the public also is educated, these epidemics of treatment will occur, but the profession will understand why they wax and why they wane, and its reputable members at any rate will not tumble over one another to bolster them up with pseudo-scientific reasons. We shall be saved from many worthless papers on treatment, and our journals will not be the subjects of amazed comment to the workers in other sciences, as they are at present. We all desire rational medicine. There can be none till the mind—the normal and not only the insane mind—has been studied with that care which has hitherto been bestowed only on the body.

At the outset it was stated that a man with experience, common sense, and little knowledge, might help these patients much more than one who was inexperienced but highly educated. The reason for such occurrence is that faith is, in my belief, the most potent part of cure, and as the disease is not physical no display of physical knowledge helps, whereas the sympathy and kindness engendered from a knowledge of the world does. The question then arises, Does it matter in the least what we do? Why not give liquid electricity, or high frequency, or whatever is the fashion of the day? If it is the fashion of the day it will most probably cure the case. The charlatan is the best doctor.

The reply is that it matters altogether. It is often easy enough to cure any present attack unless it have a very deep-seated cause. But at the next time of stress there will be a relapse, and further treatment will become necessary if the patient was cured by something meaningless just because he happened to believe in it. But the faith which the patient acquires who has been treated by the methods described in this paper leads him to see that the road to cure lies in his own mind, and he will be able in future to travel that road alone

and to arrive back in health almost before he had time to fall ill. By psychological knowledge alone can he hope to avoid relapse. And for us, it will be pleasant to stop being indiscriminate druggers and become once more what we always have been desirous of calling ourselves—doctors—teachers of medicine.

XLVII.—THE TEACHING OF PSYCHOLOGY TO MEDICAL UNDERGRADUATES.

By R. D. CLARKSON, Larbert.

For a very long time medical teaching has tended to ignore or deny the existence of a *psyche*. Psychology was metaphysical. The mind was the secretion of the brain. All that concerned the work of a medical man could be expressed in terms of matter and motion. The self, the ego, the unifying something that made a congeries of cells, each with its physical and chemical reactions on its environment, into a personality would doubtless some day be reduced to similar terms with the rest. In the meantime it was safe to take no account of it. So that, in 1906, one of the ablest of the Scottish asylum superintendents was expressing the general opinion of the profession and the schools when he wrote: "To talk of ministering to the mind diseased is to talk clap-trap and nonsense. Mental diseases, like other physical disorders, are best dealt with on the lines of common sense and general medicine." Of late years there has been a change in medical opinion, though, so far as one can learn, it has not yet affected teaching. Physiologists have begun to investigate the bodily effects of emotion in the lower animals, and it has been shown that their results apply to man. The effects of mental strain and strong emotion on men engaged in warfare or in flying have been too obvious to be overlooked. Suggestion and hypnotism have been more widely used and have been found capable of producing bodily changes. Child study having become fashionable, the medical profession has been obliged to give some attention to it, and that attention has been increased by the appointment of so many medical officers of schools. Neurologists have become convinced that the prophylaxis of many nervous disorders is only to be attained by the proper rearing and training of neurotic children. Like M. Jourdain, who had talked prose all his life without knowing it, general practitioners have begun to realise that, unconsciously, they have been doing a large part of their work by psychological methods. They have found that in the cure of disease the patient's attitude of mind was all-important, and that courage, hope, and confidence in the doctor were invaluable allies. If some practitioners still take cheap and nasty short-cuts to produce these states of mind; if we still too often hear, when a case recovers, that the

doctor was called in just in time, or, if it dies, that the doctor was called in just too late; if we learn that parents have been assured that imbecility would disappear or fits would cease at the magic ages of seven, fourteen, or twenty-one, is it to be wondered at? A medical student who has never been taught that mind exists, or thought over its relation to the body, and who, indeed, has been prevented from such thinking, except for the brief period in which he has studied mental diseases, by the multiplicity of material facts, and fancies relating to them, which he has been compelled to get up, can have no more knowledge of psychology than the man in the street. He is apt, therefore, too often to accept and use for his own purposes the ideas that he finds current on the subject among his patients. This is not for the credit of the profession or the schools.

The only teaching of psychology in the medical curriculum is in the class of psychiatry, and it is to be noted that morbid mental states are the only morbid conditions that a student is asked to study without any previous consideration of the normal. The class is a short one, the number of mental disorders is considerable, and there cannot be time for any proper analysis and description of the normal mind. The cases shown, moreover, have all been certified. Many of them were ill for months before they reached that stage and many have been for long periods in the asylum. By far the greater number were under medical treatment during their preliminary illness. Yet how little do we know of the early stages of mental disease! The study of these early stages is work for the general practitioner and for him alone. Sir James Mackenzie's appeal to the general practitioner as "the only investigator that has the real opportunity" to enlarge our knowledge of diseases of the heart applies with greater force to diseases of the mind. The practitioner cannot begin his research till he knows what he has to observe. If he is left to find out for himself where the gaps in our knowledge are, his time for observation may be too short to be of much use. Study of the present state of our knowledge of the normal mind seems the only way in which the attention of students with aptitude for such work can be directed to it.

Of late years much attention has been given to mental defect. The Mental Deficiency and Lunacy (Scotland) Act, 1913, and the Mental Deficiency Act were passed to deal with a defective class in the community "whose training is neglected, over whom no sufficient control is exercised, and whose wayward and irresponsible lives are productive of crime and misery, of much injury and mischief to themselves and to others, and of much continuous expenditure wasteful to the community and to individual families." The intention of the Acts is to have all such cases recognised in childhood, to have them properly trained so that the most may be made of their limited capabilities, and to have them placed and kept under whatever control is necessary

for their own protection or the protection of others. The detection and certification of these cases must be largely the work of general practitioners, and they must receive instruction and study mentally defective cases for themselves if they are to perform it satisfactorily. Every case must be certified by two medical practitioners, of whom one must be approved for the purpose by the General Board of Control. The first list of approved practitioners in Scotland contained 1443 names, and of these only a small proportion had studied mental defect in children. The consequence is that School Boards and Parish Councils are being assured that obvious cases of mental defect are normal or will become normal after ordinary instruction in a primary school. In this way these Boards escape their responsibility for the care and control of the feeble-minded in their areas, and the evils which the Mental Deficiency Act was passed to prevent are certain to be perpetuated. The war has stopped the public provision of institutions and schools for mental defectives by the District Boards of Control, and so has annulled many of the benefits of the Act, but no amount of accommodation will be of any avail until general practitioners can recognise the cases and are prepared to certify them correctly. One example, out of very many, will suffice to illustrate the present state of things. It was reported to one of the largest School Boards in Scotland that a boy was incapable of deriving proper benefit from the instruction in school, and that he was drifting into a career of petty crime and had been twice apprehended by the police. They had the boy examined by two experts, who certified that the boy required to be placed in an institution. The father, convinced, as so many parents are, that his boy was normal, was confirmed in his opinion by four medical practitioners, all of whom certified that they could find no evidence of mental defect. Two of them, writing from the dispensary of a large sick children's hospital, not only certified that the boy was normal, but added that, in their opinion, he would be made worse by association with children more defective than himself. This is a common view among the general public and members of School Boards, and there is not a scrap of evidence for it. If it is not corrected it will lead to an enormous waste of public money. Some Boards, with the approval of their medical officers, already contemplate the establishment of separate institutions for every conceivable grade of mental defect.

Mental defect, occurring in childhood, cannot be studied in an asylum. The cases are not and ought not to be there. It has, therefore, been the custom for the classes of psychiatry in Edinburgh and Glasgow to spend an afternoon in the session at Larbert and to see the cases for themselves. This has been found useful, but the classes are too large and the time too short to make sure that everyone has got such a grasp of the subject as he should have. The problem is a

very large and important one. The number of mental defectives in the schools of Scotland is at least 6000, and some authorities estimate it at a much higher figure. It is probable that there are as many mental defectives in need of care and control as there are sufferers from all other forms of mental unsoundness put together.

A properly educated general practitioner then requires a knowledge of the normal mind and of neurotic, neurasthenic, and hysterical conditions for his daily work. He requires a knowledge of the normal development of mind and of the evidence of mental defect to enable him to carry out his duties under the Mental Deficiency Act, and he requires a knowledge of the various forms of mental unsoundness in order to enable him to detect and certify cases of mental disease. He ought to be taught that the hygiene of mind is at least as important as hygiene of body.

So far as the detection and certification of mental disease is concerned, the present course of psychiatry meets the requirements of the student. Its only defect is that it does not provide material for the study of mental disease in its early stages, and that, therefore, students are not made sufficiently aware of the importance and the possibilities of prophylaxis. Every general hospital ought to have a ward or wards devoted to cases of incipient mental diseases, and to borderland cases such as the neurasthenics, and this material should be available to the lecturer on psychiatry for illustration and for practical work in connection with his lectures.

The study of mental defect should be begun by the setting up of some sort of normal standard. In the present state of our knowledge this standard is necessarily vague and unsatisfactory. The mental attainment of every child varies with its age and its opportunities for development, and in his work at the Sick Children's Hospital the student should direct as much attention to the development of mind as he does to the development of the body. Cases of mental defect occur frequently in the hospital, and should be demonstrated and studied as carefully as cases of bodily defect. But when all this is done the standard of normality that gradually forms in the mind of the student is a standard for sick children. If he is to advise parents successfully as to the education and bringing up of their children, and that that should be the work of the medical as much as of the clerical and teaching professions I am firmly convinced, he must see more of normal children and must know more of their average mental development at every year of school age than is possible at present. It ought not to be impossible to arrange for students seeing something of normal children in the schools, and they should study them, not only from the point of view of the school medical officer, who is too often only concerned with their bodily defects, but from the point of view of the teacher. Only by a closer co-operation of the medical and the

teaching professions will we be able to build up after the war a race characterised by the possession of sound minds in sound bodies.

Is a knowledge of the development of the mental faculties in childhood and of the defects and diseases of the mind all that a general practitioner requires of psychology? Surely not. Like all students of science, he should at some stage in his career be made to examine the foundations of his belief in the phenomena with which he deals. It will not do to say that there are men with minds so unphilosophical that they could find no profit in such an examination, that for the great majority it suffices to appeal to experience. "The field of experience is no well-defined and protected region under whose clear skies useful knowledge flourishes unchallenged, while the mist-enshrouded territories of its metaphysical neighbours are devastated by unending disputations. On the contrary, it is the very battlefield of philosophy, the cockpit of metaphysics, strewn with abandoned arguments, where every strategic position has been taken and re-taken, to which every school lays formal claim, which every contending system pretends to hold in effective occupation." Every medical student of the human mind should be made to realise this, and, if he is incapable of doing so, he would be wiser to try some less intellectual occupation. A course of lectures on psychology, with for text-books James' *Talks to Teachers on Psychology and Life's Ideals*, M'Dougall's *Social Psychology*, and Drummond's *Introduction to Child Study*, would give a practitioner a broader outlook on the problems that face him in practice and a firmer grasp of the details that must be attended to in the prophylaxis and treatment of nervous disorders.

Such a course should have a place in the medical curriculum. This could be done if a modicum of botany were to be required in the preliminary examination and an examination in psychology were to be substituted for botany in the First Professional. If this were done, more attention would soon be given to the nervous system in the class of physiology, and the present tendency in clinical teaching to ignore the psychology of the patients would be gradually but surely done away.

DISCUSSION.

Dr. Edwin Bramwell.—As regards the ideal method of teaching neurology, I am rather opposed to Dr. Graham Brown's suggestion that the student should begin with a course of physiology, pathology, etc. I think the average student benefits more if one begins by demonstrating clinical conditions to him and making him think about them, and *then* applying the physiology.

Dr. G. Robertson.—I should like to emphasise also the very important part the mind plays in the symptoms that occur in general medicine. This was brought home to me strongly when I was a young graduate and went to France to see what had been done there in hypnotism. In Nancy I saw a

patient hypnotised for pneumonia by Dr. Bernard. It struck me as rather a far-fetched proceeding, since pneumonia is a disease of very definite organic foundation; but Bernard pointed out to me that the symptoms complained of in pneumonia are nearly all mental—discomfort, breathlessness, pain, loss of appetite, sleeplessness. This convinced me that we place the organic material factors of the disease far too prominently before our minds. Even in a surgical case, like whitlow of the finger, the feeling that the patient complains of is purely a mental symptom; cut the ulnar nerve and he no longer feels any pain.

It is very desirable that mental treatments should be given intentionally and not unconsciously. Bernard's patients suffering from melancholia were given the suggestion that they would get well in a short time, that they would no longer be depressed, and that they would soon be at home with their families. When I came home to Morningside I found that Dr. Clouston said exactly the same things. In the waking state he was giving these suggestions to the patient, without realising that he was giving them treatment at all.

Dr. Fleming.—To take neurology away from practical medicine would be a very serious loss. The general practitioner does not require an elaborate course on neurology, but he wants to be able to recognise simple everyday disease, which instruction he might well receive in a comparatively small number of lectures. But that does not mean that in Edinburgh we should be content with such a course of neurology. There ought also to be a more advanced post-graduate course.

Dr. Henderson (Johns Hopkins Hospital).—In 1912 the psychiatric clinique was started in Johns Hopkins Hospital, and in that clinique the ideal was that we should attempt to get hold of patients in the early stages of various forms of mental disease and of the children in the schools; in short, really to bring the psychiatric clinique into the life of the community. The clinique is composed of eighty-eight beds, and there are both private and public wards. It is very hard to compare the Edinburgh School and the Johns Hopkins Medical School, because the teaching is so different in every way. For one thing, the Johns Hopkins students have practically all taken an academic course; they must graduate M.A. or B.A. before they enter the school. Most of the teachers there are more or less specialists. They have whole-time professorships, *i.e.* the professors devote all their time to the development of the teaching in the medical school. On that account it was quite easy to start the psychiatric department, and to combine its working with the general working of the hospital. There is very little systematic or didactic teaching in the medical school, and the result is that the psychiatric department has developed along the lines of clinical teaching. The curriculum is a four-years one, and the men have in their third year a course of instruction in elementary psychology and in general mental disease: of how to set about taking a mental case, or an early case of psychoneurosis, or on dealing with the child. In the fourth year they come into the psychiatric clinique, not only as clerks in the out-patient department; they have a definite place in the wards, where their teaching devolves almost entirely on a responsible physician. They are brought into actual touch with their cases and work them up thoroughly. They have plenty of material there and in the

out-patient department. This out-patient clinique is specially brought into connection with the education authorities of Baltimore, who have an understanding with the clinique that they shall send any abnormal children to be examined, to be put into special classes, sent to institutions, or otherwise dealt with. There is no doubt that the development of such a psychiatric clinique does tend to get the people in the community to take an interest in mental disease that they never used to have. It gets the men in the profession to take an interest also in this subject which hitherto they may have lacked. The clinique, without a doubt, helps in the prevention of many cases of mental disease. We can take a case into this clinique without certification of any kind. We have facilities whereby we can get patients to sign a paper that they shall give so many days' notice if they wish to leave, which gives us time to take steps, if necessary, to have them certified and properly dealt with. I speak from three years' experience of this clinique when I say that I am sure that it plays a very necessary part in the well-being of the community.

Dr. Carswell.—The papers read to-night have all interested me intensely. They have formed an excellent combination, throwing light on the whole aspect of the present state of medical thought and formed opinion on questions relating to neurology and psychiatry in a most remarkable way. That formal psychology and practical or applied psychology, in some form other than merely lectures on mental disease, require to be introduced into the medical curriculum cannot be doubted by anybody who has reflected upon the needs of the medical student and who has had practical experience of teaching. It interested me to hear the somewhat hesitating but fairly frank way in which one man would clear out botany and another would clear out materia medica, and so on. *I* was disappointed, perhaps, that Dr. Hart should give anything to medical jurisprudence. I would wholeheartedly clear it out. I think I heard a murmur of absolute disapproval coming from Dr. Robertson when Dr. Hart made that suggestion.

Psychology has proved its position as part of the medical sciences, and how it is to be fitted in is the only question that now remains. Judging from what one sometimes hears at meetings of alienists, you will not find many among them who could be trusted to teach good psychology. I am satisfied that under our present teaching many patients are allowed to become hopelessly insane who, if taken at an early stage, might have been cured.

That the teaching in the Johns Hopkins Hospital is excellent is known to everybody interested in the treatment of the insane and the teaching of psychology. But I may be excused for saying that although Johns Hopkins has done this work on a high scientific level, she cannot claim priority to Scotland. In a humble way, I can say that for ten years I taught men in Glasgow, in wards in which there were fifty patients, where they saw patients who had not been certified. They were taught there the signs of incipient insanity, to distinguish between the kind of patient who could be treated successfully without going to an asylum and the patient who could not, and how to certify a patient. They also got the opportunity, in twos and threes, of visiting patients reported to be insane in their homes, where they saw the whole process of diagnosis. Not only this, but the students were taken to ordinary day schools, where perhaps ten or fifteen backward children were examined for mental treatment—*i.e.* in hospital, home, and school the

Glasgow students had the opportunity of regular systematic clinical teaching in the direction practised in the Johns Hopkins Hospital, although there, to be sure, it is carried out more elaborately than in Glasgow. What has been done in Glasgow can be done in Edinburgh, and in London ought to have been done twenty-five years ago. I feel strongly that if mental diseases are to be taught as they ought to be taught, they must be taught in hospitals and in asylums also, and that the students must be brought into direct touch with the patients and the consideration of all the elements that go to form a decision as to whether the patient should be removed or not. I hope we are within sight of the time when we shall have a system of that sort in Edinburgh and in other teaching centres in Scotland and England.

Dr. John Orr.—It seems unnecessary to institute a special course of psychology for students, because few of them will take up the special study of mental disease. But it is essential that students should know something about mental disease in regard to mental deficiency in children. Clouston's personal and intimate method of teaching gave the student a good grasp of the process of examination of mental cases. There is an urgent need in the Infirmary for a large ward where incipient mental disease could be treated and where the students could study the cases at first hand. If the work conducted in Glasgow could be started in Edinburgh, it would be of great advantage to the medical school. If the students had the principles of examination for early mental disease thoroughly inculcated, the recognition of such cases in their work later would be much easier. There is no doubt that at present many early cases which might have been cured are neglected until they become hopeless.

Professor Lorrain Smith.—Our visitors have pointed out to-night a new aspect of the teaching of psychiatry—that of approaching a simple medical case from the psychological side. I was impressed by the account which Dr. Ross gave us of case-taking. At the same time, that a man should hardly be trusted to take a case until he has had some thorough instruction in the psychological problem which was involved in the relationship between himself and the patient, and the patient and the patient's known past history, is a conception which is most difficult to co-ordinate with our old ideas. I confess that I feel this aspect of the question of introducing a more psychological element into the study of all our clinical cases is rather difficult to grasp, because I do not see how the student is to get the requisite training for it, from childhood to adult life. The far-reaching nature of this conception we will have to brood upon before we can incorporate it in our Report.

Dr. Bernard Hart said in reply.—I have been asked for more constructive detail, which, of course, is an obvious necessity before any scheme can be put into actual practice; but I do not feel, at any rate so far as the south is concerned, that the introduction of teaching in psychology has been generally recognised as a necessity. It is true that the experience of the last few years of the war has thrown the matter into a very vivid light and shown that this teaching of psychology is an urgent necessity. But the first thing to be done is to make that need generally recognised in the medical schools before embarking on the constructive detail. Details of that kind are easier to settle after conference or discussion than in an individual paper. A very moderate number of lectures would suffice, but it is, as a practical

matter, difficult to condense such a wide field into a short number of lectures. At present I am engaged in teaching in a military hospital where we deal with these subjects. We are having three-months courses, where R.A.M.C. officers come for instruction in shell-shock cases. I give about thirty-five lectures, and generally cover nothing like the ground I ought to. Even the amount necessary for a general practitioner would be difficult to get over in ten lectures, because the great difficulty in practice is that you have got really very little groundwork to go on. It was that I had in mind when talking of the general reform of the curriculum. There is no doubt that if one can get ten to fifteen lecture-demonstrations allowed, a great deal could be done, and those lectures would be of enormous value to every practitioner.

Dr. Carswell criticises my suggestion of handing over methods of certification, and so on, to forensic medicine. The point I had in mind was that one of our great difficulties is to get into the students' heads the fact that certification is essentially a *legal* matter and not a scientific matter. They tend to think that certification has some place in medicine, whereas, strictly speaking, it has none. A case of insanity is a case of mental disease, and the degree for certification is a purely arbitrary point, and is dependent upon such entirely non-medical factors as the patient's income and the nature of his family, and so on. I cordially agree with Dr. Ross as to the importance of impressing upon the student that elaborate procedures like psycho-analyses, in the Freudian sense of the word, are not suitable spheres for his activity. In my practice in London I have often had very grave reason for seeing the importance of this. I also agree with Dr. Ross when he lays stress on the disastrous effects which follow in psycho-neurotic patients after bad diagnosis, such as "weak lungs." The amount of psychoneurosis to be ascribed to doctors who have treated such patients is very large. Especially in war work do we see that. The number of functional defects one sees that have been built up on a diagnosis of "weak lungs" or "weak heart" is astounding.

Dr. Ross said in reply.—I should like to say to Dr. Chalmers Watson that I hope he will not see many more such cases as he spoke of. There is no doubt that the authorities are taking this matter up much more seriously than before. Many more special hospitals are now being equipped. In the hospital in London where I am now we have come to the conclusion that no case must be discharged until he is cured; and by that we mean, if he is to be discharged from the army that he is fit to earn his living. That is a standard which every neurological hospital should definitely accomplish. As regards sending the men back to the army, from a medical point of view it is most unfortunate that that should be done at all. Forsyth put the matter very well some two years ago, when he said that one would not forbid a patient who had suffered from "railway spine" ever to travel again by rail, but neither would one intentionally send a man who had been in a railway collision by a train which one knew was going to have an accident! That is just what we are doing in the army. Although insanity and grave psychasthenia will always have to be treated by specialists, general medicine is full of neurosis; every patient who is ill has some superadded neurosis, and an enormous number of people treated for physical illness are really suffering from neurosis.

NEW BOOKS.

Modern Urology, in Original Contributions by American Authors. Edited by Hugh Cabot, M.D., F.A.C.S., Boston, Mass. Two Volumes. Pp. xiii. + 744 and viii. + 708. With 632 Illustrations and 17 Plates. Philadelphia: Lea & Febiger. 1918. $14.

In preparing this comprehensive exposition of urology the editor has enlisted the co-operation of all the ablest American specialists, which is equivalent to saying that the work reflects the most advanced aspects of the subject. For the editor justly claims that "there have developed in the last generation in this country a large group of urologists, many of whom are authorities, not only here but in the world" (Boston, Mass., presumably belonging to another planet), "on their particular subjects, and there can be no doubt that this specialty stands to-day in America at least on a par with the position which it has made for itself abroad."

This we may admit, whether or not we agree that the modern American tendency towards super-specialism is for the good of surgery as a whole. "The development of the last generation" may have "added much to the dignity of urology," but it has narrowed the surgical outlook of its votaries. It may be true that to-day "it is quite impossible for the general surgeon to master thoroughly the details of urological diagnosis," and that "though he may be expert in refinements of operative treatment, he of necessity prefers the function of the therapeutist rather than that of the diagnostician." What the general surgeon lacks in diagnostic dignity, however, may be compensated for by his therapeutic utility.

The present trend of surgery is undoubtedly towards specialisation, but this inclination, once started, tends to become accentuated until each organ in a system develops its own speciality. Modern progress has so widened the range of surgery that some division of labour is necessary, but it is a debatable point how far the concentration of a surgeon on one closely limited field is for the good of surgery as a practical art. Every surgeon comes to develop special interests, but these must not be cultivated to the extent of causing his wider surgical instincts to atrophy.

This mild protest against ultra-specialisation is stimulated by the work before us, which illustrates the extent to which the process of subdivision has gone in the science of urology.

When, however, we consider this collection of monographs as an exposition of the present-day position of genito-urinary surgery—the scope of the work is wider than its title suggests—we have nothing

but praise for it. Each essay is by a master of the subject with which it deals, and is so comprehensive that we have in these two handsome volumes a complete presentation of the subject.

Conditions of space prevent us selecting individual contributions for mention, even would it not be invidious to do so, where all are so good.

The illustrations are on the high level of excellence with which American publishers have accustomed us, and a full index renders it easy of consultation.

NEW EDITIONS.

Symptoms and their Interpretation. By Sir JAMES MACKENZIE. Third Edition. Pp. xx. + 318. With 19 Illustrations. London: Shaw & Sons. 1918.

LIKE all that comes from the pen of Sir James Mackenzie this guide to the interpretation of symptoms is the result of much clear, hard thinking, based upon long and painstaking observation. It should be put in the hands of every student of medicine, in the first place, that he may gather the results of the author's original work, but further, and still more important, that he may be stimulated to observe for himself and think out the meaning of his own observations, for not even the youngest reader can fail to be influenced by the writer's enthusiasm for personal bedside observation, or to realise the enormous field for clinical research that still remains uncultivated. The author has broken ground in many directions, and has shown how fruitful such labour may be, but he has also indicated the lines along which further work may be hopefully carried out.

To the experienced practitioner these pages will throw a flood of light on many of the obscure phenomena of disease that meet him daily, but to him also they will be as much an inspiration as a revelation. Where all is so good it is difficult to select points of special merit, but the sections on visceral pain, on the significance of reflex symptoms, and, of course, on the affections of the circulatory system, are of exceptional interest.

We have read Sir James Mackenzie with the same kind of pleasure as we first read John Hilton's lectures on "Rest and Pain."

EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES.

CASUALTIES.

KILLED in action on 2nd September, Captain J. STEEL, M.C., R.A M.C.

Captain Steel graduated M.B., Ch.B. at Glasgow University in 1916.

KILLED in action on 18th September, Captain JAMES TOWERS KIRKLAND, M.C., R.A.M.C.

Captain Kirkland graduated M.B., Ch.B. at Glasgow University in 1909, and thereafter held various resident hospital appointments in Glasgow.

DIED on active service on 26th July, Lieutenant DOUGLAS TAYLOR, R.A.M.C.

Lieutenant Taylor graduated at Glasgow University in 1917.

KILLED in action on 22nd September, Lieutenant-Colonel FREDERICK HOYSTED BRADLEY, D.S.O., R.A.M.C.

Lieutenant-Colonel Bradley graduated M.B., Ch.B. at Edinburgh University in 1906, and entered the R.A.M.C. two years later.

KILLED in action on 17th September, Captain KENNETH M'ALPINE ROSS, R.A.M.C.

Captain Ross graduated M.B., Ch.B. at Glasgow University in 1915.

DIED of wounds on 8th October, Captain JOHN WILLIAMSON FREW, M.C., R.A.M.C.

After graduating M.B., Ch.B. at Edinburgh University in 1906, Captain Frew practised in South Africa.

DIED of wounds on 11th October, Captain WILLIAM BOYD JACK, R.A.M.C.

Captain Jack graduated M.B., Ch.B. at Glasgow University in 1905, and M.D. in 1908. He was one of the honorary surgeons to the Westmorland County Hospital.

DIED on service on 9th October, Captain BENJAMIN HINTON LEIGH, R.A.M.C.

Captain Leigh obtained the Scottish Triple Qualification in 1896, and before the war practised in Peru.

STUDENT OF MEDICINE.

KILLED on service, Captain ROY FREDERICK BALMAIN, M.C., R.F.A.

Captain Balmain had just commenced his medical studies at Edinburgh University when war broke out.

Royal College of Surgeons of Edinburgh.

AT the annual meeting of the Royal College of Surgeons of Edinburgh, Dr. Robert M'Kenzie Johnston was re-elected President for the ensuing year.

At a meeting of the College held on 17th October the following gentlemen, having passed the requisite examinations, were admitted Fellows:—Thomas Hood Wilson Alexander, M.B., B.Ch.(Edin.), Captain, R.A.M.C.(T.); Jan Martinus Beyers, L.R.C.S.E. (Triple), South Africa; Edward Stanley Brentnall, M.B., Ch.B.(Vict. Univ., Manc.), Captain, R.A.M.C.(T.); Francis Davidson Cairns, M.B., Ch.B.(Edin.), Captain, R.A.M.C.; Harold Liat Hin Lim, M.B., Ch.B.(Edin.), Bristol; Thomas Robert Gray Melrose, L.R.C.S.E. (Triple), Temp. Surgeon, Royal Navy; George Robertson, L.R.C.S.E. (Triple), Captain, R.A.M.C., Dunfermline; Cecil Michell Rolston, M.D., C.M.(Manitoba), L.R.C.S.E. (Triple), Colonial Medical Service; Baron Theodore Rose, B.Sc.(Birm.), M.R.C.S.(Eng.), M.B., Ch.B., London; Thomas Henry Sanderson-Wells, M.D.(Lond.), M.R.C.S.(Eng.), L.R.C.P.(Lond.), Weymouth; John Zacherias Truter, M.B., Ch.B.(Edin.), Surgeon, Woburn Military Hospital; William Robert Elstob Unthank, M.B., B.S., M.D.(Durham), D.P.H.(Camb.), Durham; Batukdeva Prasad Varma, M.B., Ch.B.(Edin.).

Triple Qualification Passes.

AT the examinations of the Board of the Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Royal Faculty of Physicians and Surgeons of Glasgow, held at Edinburgh in October, the following candidates passed the *First Examination*:—John Y. Graham, William Thom, William A. B. Clark, Leonard L. Isaacs, Oliver H. D. Oliver, William L. Murray, William J. Blackley, and Owain ap Y. Jones.

The following passed the *Second Examination*:—Marion S. Mackinnon, Helen Worthington, and Pauline Figdor.

The following passed the *Third Examination*:—John Stevenson, John R. M'Cubbing, Agnes M. Hill, Thomas Poole, V. K. Paramanayagam, Henry A. Newton, Daniel A. Dias, James S. A. Rogers, and Walter G. Carew.

The following candidates, having passed the *Final Examination*, were admitted L.R.C.P.E., L.R.C.S.E., L.R.F.P.&S.G.:—Thomas Talmage Read, Liverpool; John Wilson Gaston, Co. Antrim, Ireland; Rebecca Goodman, Leeds; George Thomas Graham Boyce, British Guiana; Don Alfred Walpola, Colombo; Anup Singh Narula, India; Apcar Galustian, Baghdad; Sylvester Henry Meiring, South Africa; John Birchmans Bourke, Ireland; Arthur Stanley Hughes, Australia; and Fergus Donald Yourell, Ireland.

HABITUAL CONSTIPATION.

By JAMES RITCHIE, M.D., M.R.C.S., F.R.C.S.(Edin.), F.R.C.P.(Edin.).

Habitual constipation—an evil largely due to some of the conditions of modern civilisation—is one of the very common troubles regarding which the physician is consulted. It used to be much more common in women than in men—possibly it is still so—but in the writer's experience it is less frequent than it was twenty years ago, probably in consequence of the more active habits which are now in vogue. It not infrequently happens that the sufferer from this trouble, without having ascertained the cause of the difficulty in his particular case, and probably ignorant of the fact that it has several causes, has gone through the whole gamut of aperients which are so freely advertised in newspapers and journals, and seeks advice because they have lost, or are losing, the desired effect.

Habitual constipation is liable to cause a variety of discomforts —mental torpidity, lowness of spirits, headache, foul tongue, heavy breath, sallowness of skin, and other troubles which are due to the retention of the remains of foodstuffs and other waste products in the lower part of the large intestine, and the absorption of toxines produced during their further decomposition. Constipation also tends to produce colitis and local congestive effects in the haemorrhoidal veins and also in the pelvic organs both of men and women.

The most common causes of habitual constipation are the neglect to cultivate the habit of attending to the regular daily and sufficient evacuation of the lower portions of the bowel; too small amount of the contents of the bowel, either from insufficiency of food, or more commonly from too concentrated quality of diet (the foods of modern civilisation contain much less cellulose than those used by less civilised peoples); too great dryness and hardness of the faeces; sedative habits of the individual and the consequent want of nervous energy, local or general. The less frequent causes are spasm in some part of the intestinal tract interfering with the onward progress of its contents; painful affections of the anus or pelvic organs, making the patient unwilling to produce pain caused by evacuation; organic stricture of, or pressure on, some portion of the bowel, such as backward displacement of the uterus, large prostate, or other tumour, also constriction by bands of lymph.

Further consideration of this subject will be from the clinical

standpoint. In any particular case the practitioner will probably ascertain first for how long a time the trouble has lasted, also whether it has been becoming worse. Possibly he may be told that now relief is never obtained without a dose of some aperient, and that even strong aperients have little effect. This is a very common result of over-stimulation of the intestinal tract. If the patient has recently passed solid motions of considerable calibre a local examination is not necessary, but if there be any doubt on this point, and certainly if the results of the doses have been always fluid, both the rectum and the abdomen should be examined, the latter by inspection in a good light as well as by palpation, percussion, and auscultation. If examination of the rectum reveals a mass of hardened fæcal matter, this mass, or it may be a series of masses, must be removed mechanically, then a dose of castor oil prescribed, and after a few days the rectum should again be examined to make sure that all hardened masses have been removed. Treatment should now be instituted with the view of preventing the recurrence of the condition; it is therefore necessary to discover what was the cause which led to it. Some persons have never been taught and have never acquired the habit of regularly and properly emptying the lower portions of the bowel; their custom has been to wait for the call of Nature. In advising such a patient the physician should bear in mind that he may be dealing with one who has very little knowledge of physiology and is very ignorant of matters which are simple to us —that, therefore, advice must be very explicit if it is to be of practical value. Many people having hurriedly emptied the rectum believe that they have fulfilled the requirements of health; they do not realise that possibly very soon the lower colon may discharge its contents into the rectum; if this happens, the rectum may remain loaded, it gradually becomes dilated, loses its sensitiveness, ceases to give the necessary call, and also loses its power of emptying itself. At least a bad habit is acquired. It is prudent to indicate to the patient that we are creatures of habit, that our various organs also have habits good or bad, and that if a bad habit has been acquired it is possible to train the organ at fault—in the case under consideration the lower bowel—to the good habit of regular evacuation. Although, as has been pointed out by others, no harm results if the bowels do not move for two or three days, the daily habit is more easily acquired than a habit at longer intervals, and the daily habit is the more healthy. How is the habit to be acquired? By soliciting Nature daily at a regular

time, the time at which the individual will not be hurried—a morning hour has much to recommend it—and further, as the taking of food stimulates the peristalsis not only of the stomach but of the whole intestinal tract, there is a definite advantage in choosing a time not very long after a meal. Some persons who walk to business find that the exercise of walking stimulates the intestines and makes the function more easy.

Some persons solicit Nature regularly but fail to get a response, unless they have previously taken a dose of some aperient, because the contents of the bowel are *dry* and *firm*. This condition may be due to the fact that they have been too long retained in the lower bowel (generally the aperient is taken only after an interval of some days), or the dryness may be caused by the taking of too little fluid, or it may be that too much fluid is excreted by the skin, as in warm weather, or by the kidneys, as in diabetes, or it may be that the drinking water contains too much lime, or that too much strong tea is taken, or possibly that the aperient which has been taken has a secondary constipating effect. This effect follows the use of most of the sulphated waters and also those medicines which contain rhubarb. Whatever the cause, it should be avoided. A draught of water night and morning is useful; chiefly the morning dose acts as a tonic to the intestine, but elderly men who require to rise frequently overnight to empty the bladder should not take the evening draught. If much tea is taken China tea may be tried, because it contains much less tannin than Indian and Ceylon teas. (Tannin is so soluble in warm water that "antitannic" tea-infusers are such only in name.)

In another class of cases it is not the character of the contents of the bowel which is at fault, but there is the *want of expulsive power* either from general debility after an acute illness, from anæmia or other debilitating condition, or it may be due to too sedentary a life and the consequent want of tone in the system; the local want of tone may have been aggravated by inattention to the regular evacuation of the bowel. The general condition must be treated, and the local condition stimulated by massage or by means of electricity. In the less marked cases the patient himself may do the massage—a trained masseur would do more good—or the cannon-ball method may be adopted (rubber balls filled with small shot may be got at the surgical-instrument makers). In this class of cases the diet is of much importance—the rougher kinds of bread, whole wheaten, or bran bread, porridge, green

vegetables, fruits raw or cooked, figs, prunes, oranges, apples to breakfast, treacle, syrup, perkins, a draught of cold water half an hour or an hour before breakfast.

In all cases of habitual constipation what we should aim at is to discover the cause, if possible to remove it, to teach the patient to acquire the habit of soliciting Nature regularly, and, if possible, by dieting to avoid the use of drugs. All strong drugs—*i.e.* those which produce violent peristalsis and watery motions—should be avoided and, if previously in use, stopped. The cure of some cases can be accomplished without aperients, but other cases require some aperient at first, and it is important to impress on the patient the idea that the drug is given only as a temporary expedient with the object of training the bowel to acquire the habit of daily evacuation and that the dose should be diminished little by little provided one motion daily is procured. The choice of drugs is determined in some measure by the cause of the trouble. If the motions are dry and hard, liquid paraffin may suffice because it causes softer motions; sometimes a mild aperient is required in addition—a few drops of liquid extract of cascara. A mixture of purified paraffin and malt extract with 2 minims of cascara in each teaspoonful has given the writer good results in doses of a teaspoonful twice a day. For cases in which the motions are not dry, sulphur and its preparations, because they help to keep the contents of the bowel soft and do not constipate. Where tonics to the bowel are required, it is well to give along with them small doses of belladonna, which acting through the parasympathetic inhibits spasm. Where the biliary secretion is defective the writer has found much benefit from small doses of resin podophylli, euonymin, and aloin. There remain, however, a small number of cases in which it is necessary to give a stronger aperient; for these "Moir's pill" (jalap, virgin scammony, and aloes) will be found very useful; these have no secondary constipating effect and it is easy with them to reduce the size of dose.

In those cases in which the difficulty is caused by spasm of part of the intestinal tract an entirely different line of treatment is required. Sometimes the spasm affects a considerable length of the intestine. These spasms produce colicky pains, and aperients not only fail to produce evacuation but aggravate the pain. In these cases full doses of belladonna, in accordance with the susceptibility of the patient to that drug, produce satisfactory results; sometimes a single small dose of morphine may be added with advantage. The diet also should be carefully chosen

in accordance with the power of digestion; articles of diet likely to be irritating should be avoided.

Cases of habitual constipation in which there is the history of several motions a day, specially if colicky pains are occasionally present, should be very carefully investigated, even although no mucus and no blood have been passed. These, however, are significant signs. In some cases, although constipation is present, the patient complains of diarrhœa. A careful examination of the abdomen should be made by inspection in a good light, by palpation, percussion, and auscultation. When a stricture is high up in the descending colon or at the splenic flexure the motions may at times be of considerable size and of firm consistence. Skiagrams after a barium meal may be very helpful in aiding the diagnosis, although not invariably so. In any case in which stricture of the intestine is diagnosed there arises at once the question of operation. In aged persons and in cases in which only a palliative operation is practicable it is desirable to allow the patient to continue without colostomy as long as it may be safe, but if visible peristalsis persists after the bowels have been fairly moved by some mild aperient, and in the writer's opinion castor oil is the best, operation should not be delayed lest the vitality of portions of the bowel should be interfered with. If after a dose of oil, with or without the help of a high enema, there has been a satisfactory unloading of the bowel, and there is no longer visible peristalsis, operation may be delayed even for many months. In cases in which the difficulty is caused by a condition within the lumen of the bowel there are two elements which interfere with the onward passage of fæcal matter, viz. the new growth and superadded spasm. The spasm may be induced or aggravated by chill, improper food—*i.e.* food with irritating residue—or by stimulating purgatives; therefore after the bowels have been well unloaded the causes of spasm should be carefully guarded against, the diet should be of a kind to produce soft, unirritating residue, and no strong purgative should be taken, but instead use antispasmodics and have the bowels carefully unloaded. The writer has got good results from a pill containing ext. belladonnæ (gr. $\frac{1}{4}$) and ext. physostigmatis (gr. $\frac{1}{6}$), without or with aloin (gr. $\frac{1}{4}$). Purified paraffin is also useful.

Constipation in babies and children, if we except Hirschsprung's disease and allied conditions, can generally be cured without drugs, but the subject is too wide for consideration in this article.

THE TREATMENT OF SPLENOMEGALY WITH ANÆMIA IN SYPHILITICS.

By J. EASON, M.D., Capt. R.A.M.C.(T.).

In a recent issue of this *Journal* I described a case of acquired hæmolytic icterus—a condition known by various names—and discussed the differential diagnosis from allied anæmias occurring in association with hepatic and splenic enlargement. It was then stated that the various members of this group were linked together by many hybrid cases. Consequently, there are occasions when the exact placing of a case requires intimate knowledge of a subject to which contemporary literature is continually adding new facts. In addition, full knowledge of all the facts of a case, derived both from bedside examination and from numerous laboratory tests, is essential if therapeutic errors of omission and commission are to be avoided. From the therapeutic point of view, a precise diagnosis is a matter of practical urgency and not merely one of academic interest. In this connection it should be remembered that responsibility rests with the physician to advise or even to urge the patient to have the spleen removed or the no less responsible duty to advise that it be retained. Fortunately, cases usually run a subacute or chronic course, and there is ample time for gathering together the information on which alone a reliable opinion can be formed.

The following record of a case that ultimately came under my charge in a General Hospital at home shows in a measure the variety of tests to which cases in this group must sometimes be submitted. Some other matters of practical interest and importance chiefly dealing with the management of such cases will be discussed in the course of a summary of the few that have already been recorded.

Private G. F., aged 44, with fifteen years' service, was admitted to a Field Ambulance in France on 6th September 1917. The diagnosis made there was severe debility and slight D. A. H., and mist. ferr. perchlor. was prescribed. Three days later he was passed on to a C. C. S., and the record made there stated that he suffered from vague abdominal pain, nausea, occasional diarrhœa, and loss of weight. There was no vomiting. He had been in the Army for twelve years, and had served in India and Aden before the present war. He had had malaria in India. Examination showed he had a large swelling in the abdomen,

presumably the liver or "at one with the liver." The surface was not nodular. The lower edge of the liver could be felt extending below the umbilicus. The spleen was also much enlarged. The urine was normal. He was emaciated. There were no physical signs of disease in the chest. The blood-count and films were practically normal on 10th September 1917. Splenic puncture on the thirteenth day of the same month gave a negative result for kala-azar. The blood films showed no abnormality morphologically and no parasites. The blood-count was as follows:—Report by Major J. W. M'Nee on 13th September 1917. Red corpuscles, 4,432,000; white corpuscles, 5500; Hb, 65 per cent. Differential.—Polymorphonuclears, 64·5 per cent.; small lymphocytes, 8·5 per cent.; large lymphocytes, 12·0 per cent.; hyalines, 2·5 per cent.; eosinophiles, 6·5 per cent.; masts, 4·5 per cent.; transitionals, 1·5 per cent.

Examination per rectum was negative. The stool was examined on 16th September, and Major M'Nee reported there were fairly numerous encysted amœbæ, but he was unable to distinguish whether they were entamœba coli or histolytica. The diagnosis made at the C. C. S. was "N. Y. D." (greatly enlarged liver and spleen).

From 10th September 1917 to 16th September 1917 the temperature varied between 97·2° F. and 99·2° F. Thereafter until his transfer to the base on 20th September 1917 it remained normal or subnormal, and also during eight days in the base hospital. There it was stated that the blood condition was of the simple anæmic type, with definite leucopenia. It was further noted that there was a chronic history dating from the first six months of 1914. The diagnosis made was "anæmia (chronic splenic) 62—Banti's disease." The following details were recorded:—He began to lose flesh early in 1914. From 1899-1904 he was in India. He had malaria, but never dysentery. He had been stationed at Armentières for one year. When there he found he was becoming gradually weaker, and before admission to the Field Ambulance he had pains in the legs for six weeks. He states he has diarrhœa occasionally, and passes slime, but no blood, in his stools. His skin is light yellow colour, sclerotics white. There is no bile in the urine. There are some crepitations over the base of the right lung. There is slight irregularity of the heart, but no murmur. The liver dulness measures vertically between the mesial and nipple line 7½ ins. It extends down to within 1½ in. of the umbilicus. The spleen extends 3½ ins. beyond the costal margin and 1 in. below the umbilicus and is 2½ ins. from the anterior superior iliac spine. The spleen moves with change of position of the body. There is no ascites. There are some varicose veins on the wall of the abdomen. Examination of the blood shows a definite leucopenia of 4375 per c.mm. and a simple anæmia. Red corpuscles, 4,650,000; Hb, 60 per cent.; colour index, 0·6. Differential leucocyte count.—Polymorphonuclears, 67 per

cent.; small lymphocytes, 19 per cent.; large lymphocytes, 4 per cent.; large mononuclears, 1 per cent.; eosinophiles, 9 per cent.

Examination of the fæces shows many resting amœbæ of the coli type. There is no evidence of histolytica infection. Capt. J. R. Collins, in charge of the case at this time, remarks that "the absence of fever, sweating, and presence of the enlarged spleen negatives amœbic abscess as a diagnosis, and the symptoms are not severe enough and too chronic for kala-azar."

The urine contained many calcium oxalate crystals and a few epithelial cells and leucocytes.

On 27th September he was evacuated to England, and admitted to the 2nd Scottish General Hospital on the following day. On 4th October, while under the charge of Capt. Rainy, the following observation was made on the blood:—Red blood corpuscles, 4,400,000; white blood corpuscles, 6400; Hb, 60 per cent.; colour index, 0·8. Differential count.—Polymorphonuclears, 61·5 per cent.; lymphocytes, 22 per cent.; large mononuclears, 5 per cent.; eosinophiles, 8 per cent.; masts, 3·5 per cent.

Shortly thereafter the case came under my charge, and the following reports were obtained from Capt. J. Miller, pathologist to the hospital:—

15th November 1917.—White blood corpuscles, 5800. Differential count.—Polymorphonuclears, 63 per cent.; lymphocytes, 18 per cent.; large mononuclears, 6 per cent.; eosinophiles, 9 per cent.; masts, 4 per cent. 17th November 1917.—No amœbæ or cysts and no organisms of the dysentery group found in the stools. 27th November 1917.—No malarial parasites were found in the blood during pyrexia. 29th November 1917.—The Wassermann reaction of the blood was strongly positive (+ + +). The patient had previously informed me he had not had venereal disease, but now hedged when questioned further. During the first month since his admission to the 2nd Scottish General Hospital there were seven rises of temperature to 99° or 100° F. The rises recurred also throughout November. On 4th December 1917 galyl was injected at 2.45 P.M., and the temperature in the evening registered 101° F. Thereafter the temperature remained constantly normal or subnormal. He was also given pot. iodide. The general condition improved very much under this treatment. After five injections the note made on 26th December 1917 states "he has now no discomfort in the abdomen and he feels very well. The appetite is good. He is still jaundiced-looking at times after each injection, but there is no bile in the urine. On this date liq. hydrarg. perchlor. was added to his mixture. In a note made on 12th January 1918 a continuous improvement in the general condition was recorded. In all he received six galyl and three neo-kharsivan injections. The last of the latter was given on 15th February 1918. Four days later the

blood still gave a strongly positive Wassermann reaction (+ + +). Twelve days after the last injection, *i.e.* on 27th February 1918, the examination of the blood showed :—Red blood corpuscles, 1,920,000 ; white blood corpuscles, 3100 ; Hb, 61 per cent. ; colour index, 1·58. Differential count.—Polymorphonuclears, 37 per cent. ; lymphocytes, 43·9 per cent. ; large mononuclears, 7·9 per cent. ; eosinophiles, 11·2 per cent. ; masts, 0. One month later, on 26th March 1918, red blood corpuscles, 2,800,000 ; white blood corpuscles, 5450 ; Hb, 90 per cent. ; colour index, 1·6. Differential count.—Polymorphonuclears, 49·6 per cent. ; lymphocytes, 38 per cent. ; large mononuclears, 1·7 per cent. ; eosinophiles, 10·7 per cent.

On the blood, as shown by counts, the first effect was to reduce the red cells to less than one-half of their former number and to raise the colour index to 1·6. The leucopenia became more definite and the lymphocytes increased relatively at the expense of the polymorphs. There was also a considerable relative increase of eosinophiles. One month after the injections were completed the red cells showed a definite recovery of about 900,000. The colour index still remained high, viz. 1·6. The leucopenia was slight, and the differential count showed a definite tendency towards normal proportions.

Before passing from the consideration of the primary effect of the injections on the blood, I should record the fact that during the course of the injections, and a few days after one of these, a very remarkable differential count was made as follows :—Polymorphonuclears, 45·2 per cent. ; lymphocytes, 16·3 per cent. ; large mononuclears, 33·9 per cent. ; eosinophiles, 3·2 per cent. ; masts, 1·4 per cent. Subsequently a similar, though less marked, large mononuclear reaction was found to be constant in syphilitic patients early after injections.

From time to time during the six months of the patient's hospital treatment measurements of the enlarged organs were made. These show that no diminution of the size of the spleen or liver occurred before the antisyphilitic treatment was given. The table given below shows that between September and the beginning of December the liver did not alter and that the spleen apparently increased in size. Three months later, after the treatment was completed for the period under review, the spleen had become distinctly smaller and the liver also measured less.

	September 1917.	December.	March 1918.
Liver, vertical midway between mesial and nipple line	7½ ins.	...	6½ ins.
Lower edge from umbilicus	1½ in.	1½ in.	2¼ ins.
Spleen, distance horizontal from umbilicus	...	3¾ ins.	4½ ins.
Beyond costal margin	3½ ins.	...	2½ ins.
Lower edge and umbilical plane	1 in. below.	1½ in. below.	1 in. above.
Distance from anterior superior iliac spine	2½ ins.	2 ins.	4¼ ins.

The further course of the case cannot be followed, as the man was discharged from the Army medically unfit owing to splenic anæmia caused by syphilis.

The outstanding facts, so far as results of treatment are concerned, are:—(1) The general condition of the man greatly improved, and the improvement set in most decidedly soon after the antisyphilitic treatment began; the fever ceased. (2) The size of the spleen, and, to a less extent, of the liver, began to diminish only after antisyphilitic treatment was begun. (3) The action on the blood was considerable, as shown by the cellular changes, but the significance of these could not be determined at the time of the man's discharge from the Army. (4) The specific treatment had no effect on the Wassermann reaction of the blood which remained strongly positive.

While in the 2nd Scottish General Hospital he put on 12 lbs. in weight, although he again lost 4 lbs. of this at the end when he was steadily doing work in the hospital. In regard to (2) the liver and spleen became free from all tenderness, and the consistence of the liver substance gave the impression that regenerated tissue occupied the greater part of the palpable organ. A month after the cessation of the injections the blood showed a definite tendency to improve, if one excepts the colour index and the positive Wassermann reaction. Consequently, though the treatment had been beneficial, a "cure" had not been effected. I believe, also, that little prospect could be entertained that further treatment on the same lines would be more satisfactory in this particular case.

The proof of failure is not complete, although the prospect that the Wassermann test will yet become negative is remote. Is it probable the prospects would be brighter in cases in which the history of syphilis is recent? Even in the present case the result to date is that the activity of the process has been, for the present, arrested, and the treatment has not been wholly in vain. The literature dealing with this matter has so far, and for obvious reasons, been meagre. It was in 1914 that Osler first drew attention to cases of syphilis of the liver with the picture of Banti's disease, and the period begun then has furnished few and not sufficiently explicit records on the antisyphilitic treatment of this condition. Giffen has found that in a series of three cases this form of treatment was of little use. He, unfortunately, does not furnish the details necessary for others to judge of the adequacy of the treatment given to his patients. Thus, in his first case, he

merely states that antisyphilitic treatment proved unsatisfactory. In his second case the patient "remained under observation for one month, during which time she received three injections of neosalvarsan, and mercurial inunctions and potassium iodide. She gained somewhat in strength and 7 lbs. in weight. The hæmoglobin, however, remained low (58 per cent.)—a gain of 8 per cent.—and the size of the spleen was not reduced, although the liver seemed to be smaller. Splenectomy was decided upon." But, as this patient was first examined on 6th March and the operation occurred on 1st April, the period of treatment was much less than a month, and the result of the treatment, incomplete though it was, was not awaited. In his third case the information is still less satisfactory. The physician who referred the patient stated "that while the Wassermann reaction had become negative and he had improved to a considerable extent under salvarsan and mercury, on the other hand improvement reached only a certain point, and then his recovery seemed to be at a standstill." I have found reference to only two other cases in which the point being discussed is mentioned. Hartwell's patient denied the possibility of syphilitic infection, but a Wassermann reaction was positive. Neosalvarsan, mercuric salicylate, potassium iodide, iron, and arsenic had been administered while the patient's condition became less satisfactory. French and Turner's case was that of a boy aged five years, in whom there was a blood-count suggestive of the splenic anæmia of infancy. A Wassermann test had been positive several times, and the patient had received antisyphilitic treatment without benefit.

The seven cases, including my own, therefore give the following results. Reported by Box:—A child given mercurial inunction which "brought about marvellous improvement with great alteration in the blood-count; the spleen had also diminished in size." Reported by Giffen:—(1) A case in which antisyphilitic treatment for six months gave unsatisfactory results. The details of treatment are not given. (2) This patient gained strength and weight. The spleen was not affected in size by the treatment, but the liver was possibly smaller. The hæmoglobin remained low, but improved. The treatment was inadequately given—three injections of neosalvarsan, mercurial inunctions, and potassium iodide for, it seems, a period of three weeks. (3) In this case the Wassermann test became negative. Improvement occurred to a certain extent, then stopped. Salvarsan and

mercury. Reported by Hartwell:—Under treatment the condition became less satisfactory; given neosalvarsan, mercuric salicylate, potassium iodide, iron, and arsenic. Reported by French and Turner:—No benefit from antisyphilitic treatment (salvarsan, mercury, potassium iodide) nor from iron and arsenic, X-rays over spleen. Case of v. Jaksch type; Wassermann test positive; not stated whether rendered negative by treatment. Case now recorded; Wassermann test positive before and after treatment; general condition materially improved, spleen definitely lessened in size and fever abolished; six injections of galyl, three of neo-kharsivan, mercuric chloride, potassium iodide for three months.

In only one of these seven cases is it known that the Wassermann test became negative. In one case the condition became less satisfactory; in two no benefit was derived; in three some improvement occurred.

In the period preceding the publication of Osler's paper it is probable that some cases of this syphilitic type were treated by splenectomy as cases of the orthodox Banti type. Subsequently, in the period of three years the operative treatment has not had adequate trial, the number of recognised cases being too small and the post-operative periods too short. It appears, however, that uniform post-operative improvement was an early result in the few cases reported up to the present time. The following are the results of splenectomy in syphilitic splenomegaly with anæmia. In Hartwell's case very prompt improvement occurred. After two weeks the hæmoglobin had risen from 25 per cent. to 80 per cent. In Giffen's case (1), one year after operation, the patient's physician stated that she had gained much strength, had put on 15 lbs. in weight, and was feeling well. Her blood-count was as follows:—Red blood corpuscles, 3,552,000; hæmoglobin, 80 per cent.; white blood corpuscles, 11,000. The differential count was not abnormal. In case (2), eight months after operation, the patient had improved markedly in weight and strength and the anæmia had disappeared. In case (3) the patient was in excellent condition three months after operation with hæmoglobin at 99 per cent. In French and Turner's case the patient was apparently well in two months. In few of these cases do the records show whether antisyphilitic treatment was given subsequent to operation. As regards the duration of the improvement following upon splenectomy there is little that can yet be learned. One case, however, may be cited relevantly to show that this may be

brief. Copland in 1886 reported a case of this kind operated upon by Mr. Pierce Gould. The patient died two years after splenectomy with melæna, hæmatemesis, and ascites. The liver was a typically scarred syphilitic one. On the other hand, if the procedure is based on a good *rationale*, the prognosis in favour of early cases may be regarded hopefully. The *rationale* of the treatment may well be based on the idea that the spleen acts as a cesspool and that our present methods of administering antisyphilitic treatment do not effectively cope with spirochætes lodging there. It is maintained, further, that the Wassermann test seldom gives a negative result after a full course of antisyphilitic treatment given while the spleen remains *in situ* in these cases. The facts have received another interpretation. Dr. Parkes Weber has said: "It was an unfortunate fact that antisyphilitic treatment did not do these cases good in every instance; hence one was driven to the conclusion that the splenic enlargement in these cases was not always itself actually syphilitic, though it arose and flourished on a syphilitic basis." Giffen has also said: "Cases undoubtedly occur, however, in which a luetic history is obtained which seems to have no etiological relationship to the splenomegaly." On the other hand, cases which have improved little on antisyphilitic treatment and which continued to give a positive Wassermann reaction, promptly improve and become negative to the Wassermann test on the resumption of antisyphilitic treatment after splenectomy. As Mayo states, spirochætal "hibernation in the spleen is not unusual." Personally, I think it is more accurate to speak of the splenic cesspool rather than of splenic hibernation, as the latter term suggests a resting phase of which there is no knowledge. Mayo goes on to say that failure to eradicate syphilitic disease by inadequate treatment may result in a syphilitic spleen, which permits not only luetic reinfection of the body, but also causes a high grade of chronic anæmia. "In four cases of this type (probably three of these were in Giffen's series) removal of the spleen promptly cured the anæmia, and the lues thereafter quickly responded to *renewed treatment*. In all of these spleens either spirochætes were found or gummata in the spleen or liver were demonstrated." It is essential, of course, that *renewed* antisyphilitic treatment should follow operation, although published case reports do not always state that this has been done.

From this consideration of the subject I decided to inform the patient regarding the benefits and attendant risks of operation.

Before leaving France he had already been told he was being returned to England for operation, but as his general condition was now greatly improved the patient declined to have surgical treatment.

With regard to the management of such cases of syphilitic origin simulating Banti's complex, I believe that in the first instance all cases should have very thorough antisyphilitic treatment. No great harm and much improvement may result from this when carried out with care while watching the effect of each injection on the blood. If this has been done, and the Wassermann test still remains positive, operation then becomes almost as necessary as for cases of the orthodox Banti type. The need for operation would not be quite so urgent if from time to time renewed specific treatment were known to re-arrest activity. As this prospect is meantime based solely on hypothesis, the indication for operation is practically the same as in Banti's disease, if specific treatment has already failed. The results of successful operation have already been stated. The operative risk cannot be assessed on a flat mortality rate. Special operative experience is bound to reduce the risk considerably, as shown by the uniformly successful results in published cases.

Summary.—A case of splenic anæmia is recorded in which the Wassermann test was positive and antisyphilitic treatment produced definite improvement. The Wassermann test remained positive. The results obtained from specific and surgical treatment are compared by reference to seven collected cases. The late result in one operation case is also noted. The *rationale* of the surgical treatment is briefly considered. Recommendations are made for the management of such cases of syphilitic origin simulating Banti's complex.

Literature.—H. Z. Giffen, *American Journal of Medical Sciences*, July 1916, p. 5. J. A. Hartwell, *Medical Record*, 1914, lxxxv. 593. H. French and P. Turner, *Proceedings, Royal Society of Medicine*, 1913-14, vii. 77-78, Clinical Section. Parkes Weber and Box, *ibid.* Wm. Osler, *Clinical Journal*, 1914, xliii. 462. S. Coupland, *British Medical Journal*, 1886, viii. 1445.

THE TRAINING OF THE STUDENT OF MEDICINE:

An Inquiry Conducted under the Auspices of the Edinburgh Pathological Club.

XLVIII.—THE TEACHING OF OBSTETRICS TO UNDER-GRADUATES.

By Professor Sir J. HALLIDAY CROOM.

Obstetrics, like medicine and surgery, is both a science and an art, and in teaching the subject it must be realised that both are essential. Perhaps the tendency has been to minimise the importance of the science and emphasise that of the art.

Before approaching the actual subject of to-night's conference, one or two questions naturally suggest themselves. Why, for example, has obstetrics only within recent years reached the position which unquestionably its importance demands? Why, again, has the subject so long remained on a plane separate from medicine and surgery? Why has it so long remained in the hands of inferior practitioners—longer than medicine? and lastly, Why was it left to women, and why in the hands of women did it make so little progress? In looking for an explanation it seems that in the final analysis that will be found in the fact that in human history childbirth has always been regarded as a normal process. There is ample proof to the contrary, but the idea was so deeply rooted in men's minds that its eradication has been a very slow though a certain process.

It is not for me to elaborate here the question that labour is no longer a normal function, but I may just mention that 20,000 women die every year from direct or indirect effects of labour, and that we can form no idea of the late or postponed mortality of diseases acquired during pregnancy and the puerperium, and the immense amount of invalidism arising from childbed.

Hundreds of thousands of women flock to hospital for repair of injuries and relief from effects of disease contracted during labour, and 50 per cent. of women bear marks of injury received during labour.

The teaching of midwifery has always held a prominent place in medical study in Edinburgh. I wish to look at the subject from a broad and general point of view, and suggest a practicable ideal in the teaching of midwifery, primarily an ideal in general and, secondarily only, as applicable to Edinburgh at the present time and under existing circumstances. I do not here, of course, refer to gynecology, because its birth, development, and maturity have practically taken place within the last generation. But I should like most emphatically to state that

under no circumstances whatever should obstetrics and gynecology be divorced from one another. Gynecology ought ever to form an integral part of the teaching of obstetrics, and they ought to be associated in a combined course. Every accomplished gynecologist must have a clinical knowledge of obstetrics.

In the first place, with regard to the length of the curriculum, it is impossible to attempt the teaching of obstetrics and gynecology in anything less than a winter course, extending, say, from the beginning of October to the beginning of March, exclusive of the Christmas recess. I have had ample experience of what is known as a three-months' course, and there I found it impossible to overtake the two subjects in that length of time, and consequently, for many years, I was in the habit of duplicating my lectures by lecturing in the morning on midwifery and twice or three times a week in the afternoon on gynecology, which almost doubled the course, and extended it very nearly to the length of a winter course.

In the second place, I would like to point out that, in order to overtake the subject of obstetrics, it can with great advantage be divided into two parts. Whether these parts need be continuous or not is a matter of convenience. The first portion should be devoted entirely to purely systematic lectures on the anatomy, physiology, and pathology of obstetrics. No one realises more than I do that the student of to-day is over-lectured, but because systematic lecturing is overdone that is not sufficient reason why it should be abolished. It should only be relegated to its proper place, and that place in obstetrics is in the anatomy, physiology, and pathology of pregnancy. While a considerable amount of surgery and medicine can be learned perhaps as well from books as by teaching, yet obstetrics is a subject which lends itself more to lucid and definite systematic teaching than any subject in the curriculum. Didactic teaching should be concretely illustrated. This may best be accomplished by means of models depicting accurately everything in obstetrics possible of reproduction. I need not enter into details as to what these ought to be—obstetric anatomy, structural changes of all kinds in the uterus from the beginning to the end of pregnancy, attitudes, positions, presentations, mechanism of labour, and so on; and of recent years the adoption of opaque and lantern slides is essential for didactic teaching.

I by no means wish to over-emphasise the importance of didactic teaching. It is indispensable to the teaching of obstetrics as a science, and for the reasons I have just stated must precede and sometimes accompany the teaching of the practical and clinical side of the subject.

The great aim and object must be to avoid repetition as much as possible, and while, of course, the subject of embryology forms no integral part of obstetric teaching—being overtaken by a special teacher in anatomy—yet it must be obvious that there must be a constant

reference to this subject, in some form or another, during the lectures. A saving might be accomplished both in anatomy and physiology, although there again it is necessary that the questions of anatomy and physiology, although taught in reference to obstetrics only, must be dealt with in a general way as well. It must be distinctly kept in mind that the student entering on obstetric study is entering on a perfectly new field, and anatomy and physiology must be dealt with in a definite and concrete form as far as they are applicable to obstetrics proper.

In connection with this first half, tutorial teaching is of the utmost value. The teaching of all microscopic work, microscopic demonstrations, and the study of the subject from this aspect, are best undertaken by a competent tutor or assistant. To this I attach very considerable importance. The teaching of small sections in this way is of immense advantage.

The second part of the course should be devoted to obstetrics as an art. By this I mean that the whole question of labour—normal, abnormal, tedious, instrumental, complex—should be undertaken by occasional lectures, demonstrations, and clinical instruction according to the discretion of the teacher. It is my opinion that clinical instruction in the hospital should run concurrently with the second part of the course. I have tried both ways, and I am certain that it goes a very considerable length in adding interest to the course if these two parts are run at the same time. After the student has been thoroughly grounded in the preliminary part, he is quite competent to realise the minutiæ and importance of the clinical section. Systematic lectures, while forming an integral part of the course, would be supplemented by clinical teaching. While I consider the latter all-important, I am of the opinion, however, that, even in connection with the clinical aspects of midwifery, much is to be gained by the student from lectures given from the clinical standpoint of the lecturer's experience.

It cannot be too strongly emphasised that while the student of surgery and medicine sees his hospital cases daily, the student of obstetrics on the other hand has no such advantage. What I claim for the student of obstetrics is that he should come in contact with the routine work of the hospital every day for a certain length of time. Compared to medicine and surgery, of course, the subject is relatively small, and therefore the shorter time will accomplish all that is required.

My opinion is that a month's clinical work at the hospital gives the student all that he really requires to see. For example, he has first of all an opportunity of examining pregnant women daily under the superintendence of a skilled teacher—a touch class. To this I attach the greatest importance. He sees labours conducted in the hospital under competent management. He has an opportunity of seeing

several times in the month all the commoner complications, such as the application of forceps, conduct of abortions, eclampsia, premature labour, and so forth. These occur more or less every month. He has, further, an opportunity of seeing in the hospital the various conditions of the puerperium and the conditions of the infant. This I am perfectly certain, from a long experience of it, is essential for every student of obstetrics. He may, if he likes, extend his experience at his discretion, but a month's daily attendance ought to be the irreducible minimum, with the presence there daily of the same teacher if possible.

Furthermore, it must be distinctly kept in view that the function of a school of medicine is not to produce specialists, but general practitioners, and therefore it is of the utmost importance that men should be brought into daily contact as students with the work that they are to pursue in after-life.

My idea, therefore, is this: in order that a student may have an opportunity of studying midwifery systematically and clinically concurrently (because, after all, this is to my mind a very essential feature), some such method as this should be adopted. First of all, I think four months of obstetrics and one month of gynecology makes an absolutely complete course, but I do not think that less would cover the subject. I have no wish to lay down any hard-and-fast rule as to the number of lectures. All I desire to indicate is the relative time given to each of the three departments, namely, systematic teaching, practical and clinical teaching, and gynecology. Speaking, therefore, of obstetrics pure and simple, if it were divided in this way, so that a man might have two months devoted entirely to systematic lectures and two months employed in lectures, demonstrations, and clinical instruction, this would accomplish all that is required. I can anticipate a criticism of this matter, because I can see that my point may be traversed by showing that only a limited number of students can be accommodated at the cliniques during the winter session; that from fifteen to twenty can only be accommodated each month. That, of course, is a matter of arrangement. Obviously it is impossible to undertake all the students in small clinical classes during the session, but this difficulty can be overcome here, as it is elsewhere, by these cliniques being conducted by other members of the staff in succession.

The clinical teaching of midwifery to a class of students is, of course, a development of these days of anæsthesia and asepsis. Before the days of Simpson and Lister such teaching was attended by difficulties and grave risks to the patients. With anæsthesia and due precautions regarding asepsis these difficulties and dangers are now fortunately removed. Hospitals were in those days dangerous institutions, and the clinical teaching was an impossibility.

A very excellent attempt was made to overcome the difficulty of the students by the establishment of the Milne Murray Home. It was

ideal in its conception, and could its object have been achieved, it would have been a lasting memorial to the eminent physician after whom the home was called. It was found that during the working session, summer and winter, the students could not be prevailed upon to reside in the home for a month at a time, and the expense was considerable. It was therefore occupied by maternity students only during the recess. The home offered exceptional advantages to students, but its working as a practical method was surrounded by so many difficulties that it ultimately had to be abandoned.

So far as I understand, this conference refers to undergraduates only. As to the special teaching required for post-graduates and those who wish to specialise, that is a different matter altogether, and does not fall to be discussed at present.

Naturally, the teaching of the clinical and practical side of obstetrics can be accomplished satisfactorily only through the medium of a suitably equipped and properly conducted hospital. Such hospitals should be teaching and research institutions in the fullest sense of the term, with obstetric material freely and constantly available, and the staff should consist of teachers only. For the proper utilisation of the hospital material there ought to be a laboratory connected with the hospital where all the necessary investigations—pathological, chemical, and others—could be conducted under the charge of a qualified superintendent. Until this is accomplished the work of the hospital cannot be properly pursued. Incidentally may I remark that this is the clamant need of the hospital here. The reconstruction of the present one has been so often discussed and so often put aside that the hope of a new one, which is so very much needed before the department can ever hope to fulfil all its functions, must, I fear, be relegated to the somewhat distant future.

With regard to extern work a student has two options. Either he can take the cliniques referred to and twelve cases (ten cases really, as two can, of course, be taken in the hospital), or the Medical Council gives him the option of taking twenty cases anywhere he chooses.

While believing that the extern attendance upon midwifery cases is of less importance than the clinical instruction given in a hospital, at the same time it is a branch that must not be neglected. Ten cases carefully demonstrated in hospital are worth fifty cases attended by the student without instruction. Yet I am of opinion that if these extern cases were managed as they ought to be, and carefully recorded, they would be of value in giving the men confidence and experience. My opinion is, further, that each man ought, when he attends these extern cases, be given a case-book in which to record the pulse and temperature daily for ten days, with any remarks about the case that may occur to him, such as the necessity for calling in assistance, and any complication that may occur. As I have just said, the students

should be supplied with registers for the purpose, and these books should be handed in and carefully examined along with their other certificates at the time of entering their names for the Final Examination. This system is carefully and thoroughly carried out by the Central Midwives Board for Nurses, and it is of equal if not of more importance that it should be carried out for the students. I am well aware, of course, that irregularity may occur in this as in everything else. Case-books can be made up to order at any time. But if a detailed record of the cases was insisted on, it would impress on the student the importance of this part of his work and with a little superintendence on the part of the hospital medical officers the accuracy of these reports could be easily verified from time to time.

So far as the extern work in the Edinburgh School is concerned, I have shown in evidence before a conjoint Board of the Royal Maternity Hospital and the Medical Faculty that there are ample cases in Edinburgh to supply material for the whole of the students were the work spread over the whole session, and I do not propose to go into the figures again to-night, as they have no bearing upon the question. But I would just like to say that from my point of view it is immaterial where a student gets his extern midwifery. It has long been a recognised habit among the students in Edinburgh that they should go somewhere during the summer vacation by way of a holiday, say to Dublin, Bristol, or Liverpool, and have their extern cases there. I offer no objection to this whatever, nor can I see how in any way it is a disadvantage. My opinion, however, has been traversed by the Dean of the Faculty of Medicine, who points out to me that it is a flaw in the curriculum that students remain under the impression that they cannot get their proper number of extern cases in Edinburgh, and that fathers and guardians of these students often write to the Dean to express their disappointment that the complete course of midwifery is not available in the city of Edinburgh. Now this is quite a mistake. Edinburgh can supply the needs of all the students if only the work were properly systematised. But it must be obvious to anyone that it is impracticable to expect students to attend extern midwifery during the period of their winter study or summer classes, and it must be, and always will be, the case that men will take this irregular work during their vacation period. Any student can get the number of cases he requires if he chooses to suit himself to the circumstances, but that would necessitate a certain number taking out their extern cases during the time they are attending other classes, and this they find interferes so much with their work that they prefer to go elsewhere during the vacation. Neither this hospital nor any other that I know of can supply sufficient cases in three months for 150 to 170 students. Therefore, so long as we can give those who desire to remain in Edinburgh a sufficient number of extern cases that is all that is required of us.

There is no reason why those who desire it and can afford it should not go to other centres for their education in this particular department if it best suits their convenience.

This is the common experience of every hospital in the kingdom, and the reason why the other hospitals are able to accommodate our students is because their own clientele of students is relatively so small. So long as we can offer to students who really wish to take their complete course here the adequate number of cases, no fault can be found with other men who have the means and who take their cases elsewhere. It seems to me we entirely amplify our bargain, and further, the Medical Council is quite contented with twenty cases attended anywhere the student chooses to take them.

To bring the matter to a conclusion, my ideal is that midwifery should be taught in two definite and distinct parts. First, the scientific part, which is overtaken by daily systematic lectures with the aid of tutorial demonstrations on models, diagrams, and microscopic work. Secondly, a practical and clinical part, which is conducted by occasional lectures, demonstrations, and clinical lectures in the class-room and in the hospital.

Concurrently with this second portion there should be daily instruction in the hospital. First of all, in touch work, which is of the utmost importance; secondly, in normal labour; thirdly, in the various abnormal conditions of labour and the puerperium, including instrumental work with forceps; fourthly, laboratory work, where specimens are examined and chemical work done; and finally, for the sake of experience and giving confidence, the students should attend a certain limited number of extern cases under the circumstances I have defined.

In all suggestions for the advancement and effectiveness of the department of obstetrics it must always be borne in mind *qui va piano, va sano; qui va sano va lontano.*

XLIX.—THE TEACHING OF GYNECOLOGY TO UNDER-GRADUATES.

By A. H. F. BARBOUR, M.D., F.R.C.P.

By this we understand, how is the university to turn out a graduate qualified to deal in practice with the diseases of women.

Gynecology is a subject in which the general practitioner should be efficient, as in midwifery. For a patient expects, and reasonably expects, to be treated for a gynecological condition in the first instance by the physician who attended her at her confinement, and it is for him to say when she should pass beyond his care. (I use the "him" and "his" in the sense of *homo*, not *vir*, because women now take their place alongside of men in their training by the university.) The

examination of the patient is at first in his hands; the diagnosis of her condition, provided he is competent to make one, rests with him; and the routine treatment of ordinary cases—what is described as "minor gynecology"—belongs to him. The general practitioner, however ignorance renders him inadequate, is a gynecologist in spite of himself. He must at least profess to be able to deal with the diseases of women. If he is not able, then he comes gradually to camouflage incompetency with quackery.

The importance of an adequate knowledge of gynecology—adequate, I mean, for general practice—has only of recent years been recognised. How this is to be secured is a question peculiarly pertinent to the Edinburgh Medical School. That the graduate be competent in gynecology as in obstetrics should be the concern of a school which lays claim to the founder of modern gynecology in Britain as it does to the first Chair of Midwifery.

How is the undergraduate to be taught gynecology, systematic and clinical? To answer this question we must first inquire what has been done during recent years, and then what should be aimed at.

In the time of my predecessor there was a systematic lecture on gynecology once a week in the course of midwifery and diseases of women. In the Royal Infirmary clinical teaching was given to large cliniques as part of the teaching in clinical medicine, while every sixth lecture in the clinical medicine theatre was on a gynecological subject. In the clinical medicine examination of the Final, a gynecological case was given to every sixth candidate by lot. That is to say, gynecology was in the systematic teaching linked up with obstetrics—a very important relationship when we consider how close the connection is between the subjects in practice. In clinical teaching it was linked up with medicine, a no less significant relationship when we remember that gynecology deals with one of the several systems into which the female economy may be divided. No handling of a gynecological case can be adequate which does not recognise this fact. Disturbances of the reproductive system are closely related to those of the circulatory and digestive, and especially of the nervous, system, and we occasionally see a gynecological condition dominating the whole female economy. *Propter ovarium est mulier:* and while the discussion of the relation of the function of the normal ovary to the individual belongs rather to the physiologist and the psychologist, the gynecologist has a good deal to say in cases of disturbances of its function. So much for gynecological teaching in Edinburgh up to fifteen years ago.

When the work of the Chair of Midwifery and Diseases of Women was divided, the connection between obstetrics and gynecology was maintained, but the lectures in gynecology were made consecutive—a great advantage to the student. In the clinical teaching the extramural ward was placed on the same footing as that of the university:

the two wards were united in a gynecological department independent of the medical and surgical sides of the Royal Infirmary. Limited cliniques with a course of five weeks' duration were introduced. Gynecology took its place alongside of medicine and surgery in the clinical examinations of the Final. So much for gynecological teaching as we find it to-day.

Before considering its aims and how these may be attained, let me mention in passing some considerations applicable to other subjects also. In the class-room the student's mind should be present with his body. He cannot tackle a new subject when he is thinking of another made more urgent by a Professional in prospect in which he has previously failed. To sit in a class under these conditions is a waste of time. Then, given a mind at leisure, attention will be stimulated if work done in the class lightens the Professional in prospect. The class examination in gynecology is a more adequate test of a candidate's knowledge than the single question set in the Professional. A student who has obtained over 60 per cent. in the class should be exempted from the written in the Professional: he will have to appear for an oral examination. To get over the difficulty of a possible inequality in the standard of non-university qualifying classes as compared with the university class, the extern examiner might sample the class examination papers of the extra-mural and those of the university class.' This will mean no more work for him than reading examination papers for the Professional as at present. If this suggestion were carried out, it would still be necessary to have a written Professional examination for candidates who had not obtained 60 per cent. in the class, and also to determine honours. The record of previous work might also come into the clinical examination in gynecology, as I shall indicate immediately. Before the exigencies of war-time had affected work in the ward, I used to have a record before me of the candidate's percentage in the systematic class examination, of his attendances at cliniques, of the cases he had taken in the ward, which influenced my decision in the case of doubtful candidates.

So much for some preliminary considerations. We have now to ask what is aimed at in gynecological teaching and how this is to be attained.

And first, what should be the character of the university lectures? I use that term rather than systematic lectures, for to give in the compass of twenty lectures a systematic course in gynecology, medical and surgical, is manifestly impossible. The remarkable development of operative gynecology during the last thirty years, as evidenced by the text-books in that subject, would demand a much longer course. Nor is this required if the aim is to turn out a graduate qualified to deal in practice with the diseases of women.

The university lectures are a preparation for the clinical instruction

which is to follow, and should lead up to it. They are like a course in the building of the Temple of Æsculapius, resting on the pillars of anatomy, physiology, and pathology, and supporting the dome of clinical work. Let me point out how these lectures can be made of use to the student. The first essential is diagnosis. In diagnosis he has to learn first the normal, and then pass to the abnormal. The form, size, consistence, and position of normal structures, and these as modified by pathological conditions—in fact, all that can be recognised by the sense of touch—enter so largely into gynecological diagnosis that the study of specimens is invaluable, supplemented by drawings of frozen sections which represent relations of parts as they are found in the living subject. The lectures should, therefore, take the form, as far as possible, of demonstrations giving a basis for the clinical work which is to follow. Full note-taking should be discouraged, and can be relieved by a carefully prepared *précis* of the subject in hand or figures of specimens with a descriptive note. The reading of the student requires to be directed. The difficulty in reading for the student is that any text-book worth the name gives more than he requires at the time—more than he has time to read. He needs to be told what to miss as well as what to master. The principles of gynecological treatment must also be given in these lectures, because the clinical teaching is, as we shall see, largely taken up with physical diagnosis. A brief account of the more important operations is necessary to enable the student to follow these when he sees them in the theatre.

These university lectures must be given before the clinical work of the final year, and, from the close connection that exists between gynecology and obstetrics, they may be treated as part of a combined course. To cover the ground, not less than twenty lectures or demonstrations are necessary.

Passing now to clinical teaching, this can only be carried on in cliniques limited to ten or, at most, twelve members, and this in the interest alike of patient and of student. The delicacy and difficulties incident to gynecological examination make it desirable that not more than four students be present in the case of an out-patient clinique or at a dispensary—I speak from fifteen years' experience of dispensary teaching. To increase the number is to lessen the effectiveness of the teaching. In the clinique room of the hospital ward, where the patient is usually under an anæsthetic, the number may be increased to ten or twelve. But this should not be exceeded in the interest of the student, and for this reason: while in surgery and medicine a considerable number of students may be taught from one case, in gynecology each case serves for the instruction of only two students, or, if the patient be under anæsthesia, of only four, as only that number can examine the patient. I use the term instruction advisedly—instruc-

tion in the sense of building up knowledge. It is only the student examining the case who profits. The group gathered round the patient are like a company standing round a dinner-table set with a cover for one. They stand and discuss the menu; only he who sits at the table is fed. That each man may have his turn in an hour, the number should be restricted to ten. Given two wards, which is all the provision at present made for gynecology in our Royal Infirmary, it is a simple calculation how short the course must be to overtake the number of students in the final year, due regard being paid to fitting in this with other special courses. Five weeks have been found to be all that can be given, which means twenty to twenty-five meetings of the clinique, the number depending partly on the amount of material. As these cliniques, held in the morning at ten o'clock, have to run over a considerable period of the year, I would ask the forbearance of my colleagues, who are handling large numbers of students and for a longer period, if the few students—few because only a certain number of the twenty will be working under any given colleague—who happen to be attending the gynecological cliniques are absent from their wards during these five weeks.

How can these five weeks be made the most of for the student, and by whom should the teaching be done?

Hospital training is only a preliminary to practice in which the graduate has to teach himself. The aim of hospital work is to start the student on the right lines for instructing himself afterwards. Here, as in all cases of practical work, what is required is to place the tools—in this case the methods of diagnosis—in the hand of the apprentice, and show him how to use them. The initial difficulties are greater in the case of gynecology than of either medicine or surgery, and unless these are got over in hospital work, the graduate will never learn in practice. I need not dwell on these, as they are obvious: the delicacy of the investigation under all circumstances, the difficulties due to the sensitiveness or nervousness of the individual patient, the necessity in the first instance of gaining the confidence of the patient, which is more prominent here than in medical or surgical work.

In the limited clinique the student has to be taught first the normal—for example, the position, form, size, and mobility of the uterus as recognised on bimanual examination—in order that he may be able to detect the abnormal. Once he has literally grasped that, he can go on to the abnormal. This teaching should be carried out by the experienced gynecologist, not relegated to the tutor, as may be done in medicine. And for two reasons: in the interest of the patient, as examination is always a delicate matter, and in the case of a nervous patient may be difficult; and in the interest of the student, that he may learn from that one examination as much as may be

taught by one of experience. In the taking of the history the aid of the gynecological tutor comes in. Every member of the clinique should take at least two cases under his supervision; in doing which the tutor will have an opportunity of discussing with him the significance of symptoms and draw his attention to the salient points in the history of a gynecological condition as this differs from a medical or surgical one. I lay special emphasis on this, because, with the patient under anæsthesia, there is no time to read and discuss a history at the clinique: attention has to be concentrated on the examination and physical diagnosis. Such records, carefully taken under supervision, will form an important part of the clinical instruction, and might be taken into account in adjudicating on the candidate's position in the Final Examination.

The problem in a large school like ours is how to make the most of the available material. With the increase in the number of students, due to the influx of women, it becomes increasingly difficult. As things are at present, a few of our students seek their clinical instruction in gynecology elsewhere.

I have not referred to the importance of gynecological teaching on out-patients which might be used to supplement that in the wards, and has this special value, that the student sees the minor cases and the chronic ones which will form the bulk of his practice afterwards. Gynecological teaching at the dispensaries has also proved a useful adjunct in Edinburgh in the past, but, while perhaps the best training for practice, it has only been used by, and is only available for, a few students who are keen on gynecology.

Some may ask whether the undergraduate can by five weeks' clinical instruction be qualified to deal in practice with the diseases of women. A six or eight weeks' course, or extending the clinique to an hour and a half, would certainly be much better, and Edinburgh should lead the way in giving gynecology its right place. Under the existing conditions of the curriculum, five weeks is all that can be obtained, and I have endeavoured to show how this too short period should put the undergraduate in a position, as regards physical diagnosis, to educate himself afterwards in practice—given intelligence on his part. The intelligent practitioner—gynecologically intelligent—is the man who knows that diagnosis comes first—comes before treatment; who knows in certain cases to say with confidence to his patient, "Madam, there is nothing the matter with you," and in others to say to himself, "This is a case I am not competent to deal with"; who knows, in a suspicious case of cancer, to pass it on to the expert for certain diagnosis and early operation; who knows, in a suspected case of extra-uterine gestation, that life will be saved by immediate operation. And the intelligent practitioner knows what he does not know.

L.—THE TEACHING OF OBSTETRICS AND GYNECOLOGY TO UNDERGRADUATES.

By F. W. N. HAULTAIN, M.D., F.R.C.P.

Midwifery has been aptly and very truly termed the keystone of medical practice, and occupies a position of equal importance with medicine and surgery. It differs, however, from these subjects, in so far as teaching is concerned, in two points: Firstly. It is smaller and more concise and can be fully taught, so far as theory is concerned, in one winter course. Secondly. The knowledge of the entire subject must be so acquired by the student that it is both metaphorically and practically at his finger ends.

Medicine and surgery are so vast that only a general and comparatively superficial knowledge of the subjects can be taught, but fortunately more is not essential, as almost in every case, if difficulties arise, there is time for reading and investigation and consultation, without seriously menacing the welfare of the patient. In midwifery, on the other hand, complications arise which demand immediate and competent treatment, if a fatal issue is to be avoided. Midwifery training must therefore be thorough and complete, both theoretically and clinically.

Under existing conditions, the teaching of midwifery in Edinburgh is far from satisfactory—indeed it remains as it was forty years ago, when I first studied medicine. No progress has been made as in the other final subjects, and revision is clamantly called for. So far as the theory is concerned, 100 lectures for the combined subjects of midwifery and gynecology are required and absolutely necessary—a fair division being seventy-five midwifery and twenty-five gynecology lectures. With fewer midwifery lectures it cannot be completely taught, as it is essential that the whole subject must be traversed and thoroughly explained.

It is, however, the clinical teaching that is by far the most important and which is so woefully deficient. It consists at present—firstly, of attendance at the Maternity Hospital for a month, where at a certain hour cliniques are given by the physician in charge, and secondly, the personal attendance on twelve confinements at their own homes.

I need hardly point out that from the uncertain nature of cases of midwifery it is quite a possibility that a student might attend at a certain hour regularly for a month and during that time not see a single case of actual labour, and it is impossible that he can see a case in its entirety. To go round the wards and have lectures delivered on patients lying in bed who have suffered from complicated confinements is not clinical teaching.

The essential of clinical midwifery is to see and follow the actual case in progress, observe how it is managed in a capable way, and there gain experience which is invaluable and otherwise impossible to acquire. To do this the student must be resident in the hospital for at least a month, ready to be called at any hour, day or night, as cases arise, and follow them subsequently at the daily visit of the physician in charge. He should also during his stay conduct at least three cases under the direct supervision of the resident doctor, and by this means become conversant with the management of normal cases. Having done so, it ought to be unnecessary for him to attend more than three cases at their own homes. To conduct under direct supervision or see one case conducted properly, is, in my opinion, worth more than attendance on 100 cases by a student whose only knowledge has been acquired from lectures, who, in fear and trembling, waits anxiously and Micawber-like at a patient's bedside for the fœtus to turn up and enthusiastically welcomes its timely arrival, as he would an old friend or relative who has crossed the seas subjected to the risks of U-boats and mines, of which he has read but has no idea of combating.

But further, by residing in the hospital the student has the opportunity of seeing the management of complicated cases, which is the very essence of midwifery teaching. In the practice of midwifery abnormal and complicated cases are rare, but it is for their efficient management that medical men are asked to attend. If all confinements were normal, the attendance of doctors would not be called for; anyone with a knowledge of cleanliness is competent to wait till a normal case is delivered. In a normal case a doctor is only an interested spectator, but is engaged to be present in case of any complication, which may roughly be said to occur in under 10 per cent. of cases. It is therefore abnormalities that the student should specially see and gain confidence in, and it is only by residence in a hospital that this can be acquired. Such being the case, one naturally asks, Is such training practicable in our school? This can at once be answered in the affirmative. Connected with the hospital there is a residency where twenty students can be accommodated, and which, indeed, was twelve years ago actually in use, but for some unknown reason was shut up—probably because residency was only optional.

In nearly every medical school a residency is in existence and largely taken advantage of by numbers of our own students who are attracted to them. In like manner, doubtless, students from other schools would be attracted to our maternity clinique and reciprocal advantages thus secured.

It is a pity (to say the least) to think that while so many of our students go to other schools, such as Dublin, Manchester, and Glasgow, for their clinical midwifery, we have nothing of a similar nature to offer to attract their students to us.

Compulsory residence in a maternity hospital would not interfere to any great extent with the student's attendance on his other classes. When there is nothing doing in the hospital he is free to go where he wishes. He might, perhaps, in his month's residency be absent from half a dozen lectures without any great loss. Before being admitted to the residency it is essential the student must have a practical working knowledge of the subject. To meet this, I would suggest a short practical optional course of twenty-five lectures in the fourth summer, given by the university assistant, for which a guinea might be charged. After attendance on these he is free to take the clinical month at any convenient time before, during, or after the ordinary midwifery lecture course. By such means he will be able to appreciate the value of the clinical material he sees, and take full advantage of the cases presented.

Gynecology and its teaching is of very minor importance in comparison with midwifery. It ranks with the diseases of the eye, ear, and throat, as mainly a speciality. In detail it is a highly specialised branch of surgery, which it is absurd to ask the average student, with his already overcrowded curriculum, to have more than a general knowledge of. This can be efficiently attained, so far as necessary, by a course of twenty-five lectures, and clinical instruction in vaginal examination extending over six to eight meetings.

That he should have a special clinical examination in this subject any more than in ophthalmology, laryngology, or insanity seems unnecessary, when one considers the very limited opportunity he can have in a large school such as this in acquiring clinical instruction of more than a very rudimentary nature, as it is, without doubt, the most difficult subject to teach clinically to large numbers, if the finer feelings of our women are to be considered. That it should therefore be hall-marked by a special examination seems to me to be merely a waste of valuable time to student and examiner alike.

I should further like to say that I consider that our university authorities made an error when they separated the teaching of gynecology from midwifery. The two subjects are intimately associated with each other. The foundation and essence of gynecology are its obstetric bearings. The causes of most of the conditions and their relations to present, past, and future pregnancies are ever present, and must be more efficiently dealt with by one teacher where continuity and sequence can be maintained.

But apart from this, a much more serious and important question arises, viz. its future effect on the Chair of Midwifery. By having removed gynecology with its associated hospital wards from the Midwifery Chair, there has practically been removed any chance of attracting any eminent teacher of obstetrics from other schools. There

is no such person existing as a pure obstetrician. If there ever has been such, he is now as extinct as the dodo.

The practice of the subject alone does not afford a living wage. The bulk of the obstetrician's income is derived from gynecology, and one cannot expect anyone to be attracted to the chair shorn of its gynecological wards, through which he can alone gain a connection with the surrounding medical profession and thus keep himself in a manner befitting his position. Under existing conditions, candidates for the chair must therefore be confined to local gynecologists, who are forbidden to teach the subject by which they have made their reputation and are making their livelihood—surely an anomaly!

Unless, therefore, some generous donor be found who will endow the Chair of Obstetrics and make it independent of gynecological practice, it seems to me essential for the good of the school that the subjects of midwifery and gynecology be combined and given by the same teacher, who shall, as before, have gynecological wards in the Infirmary at his disposal. By this means alone can we hope to attract men of eminence to the chair, and maintain it in the high position it has for so long occupied.

LI.—REASONS FOR THE PRESENT DEFECTIVE EDUCATION IN OBSTETRICS, WITH SUGGESTED REMEDIES.

By E. HASTINGS TWEEDY, Professor of Obstetrics, Royal College of Surgeons in Ireland, Dublin.

Those acquainted with the requirements of general practice will not deny that the modern education in obstetrics enjoyed by the medical student fails to procure for the community at large even a moderate degree of safety. This is a serious indictment which I have endeavoured to place on record without exaggeration, for it affects in a very vital manner the future health of the community. The opportunities afforded the trained practitioner in combating death and permanent disablements in the case of infants and their mothers are greater than those possible for the rest of human beings. The present-day destruction of maternal and infantile life is an economic loss of the first magnitude and one which vitally affects the honour of our profession, for its most potent cause lies in the inadequate knowledge of the obstetrical attendant

For defective obstetrical training I hold three factors responsible: 1st. The bodies who direct the medical student's education; 2nd. The medical student, and 3rd. The maternity clinics. Of these the first is the most important and should be given primary consideration.

The gentlemen forming these bodies are as a rule consultants and anatomical specialists. They are out of touch with the needs of general

practice, and they cannot divorce from their minds the notion that obstetrics is after all but a small branch of general medicine, knowledge of which can be easily acquired by any well-educated surgeon in a comparatively short time. They think it can be learned by listening to a course of lectures delivered in the medical school and by the observation of a certain ritual in the conduct of a number of normal cases. Some hold that the student must have his name entered on the books of a maternity clinic for a named number of weeks, and a few go further in actually requiring thirty attendances at a special maternity institution, thereby giving a sanction as to the number considered sufficient to perfect a man in his art.

It must be emphatically stated that no man who has attended a maternity institute only thirty times could be sufficiently trained in the most moderate requirements constituting a "safe practitioner." Again the fact must be insisted on that the average man cannot perfect his art in private practice. Private practice for the most part habituates him to short-cuts and easier methods which enable him to muddle through many difficulties in a manner which seems fairly satisfactory, but which those of wider experience have proved to be dangerous or harmful.

In the second place, the student's responsibility is evident, but his shortcomings may be palliated. From the first he gauges the degree of amused tolerance entertained by his surgical teachers for the obstetrical art. He learns from his senior friends of the discomforts and degradations through which he must pass during his attendance on the practical obstetrical course. He understands that he must go through a certain procedure in a given number of confinements to entitle him to name them as conductions. For these cases he is in competition with untrained and often ignorant probationer midwives, and at times must find himself subordinate to and under the orders of the midwife. He is told that this course is of no assistance in enabling him to answer questions for his Final Examination, and he learns of many valuable expedients whereby he can evade it. He also notes that there is no provision made as to the period for taking out his course, and if he is to prevent it clashing with his general hospital or other important specialities, he must forego his vacation and work at it throughout his holidays. It is clear that, with such difficulties besetting his path, the average man cannot view the course in any other light than that of a disagreeable necessity, to be evaded or scamped by every art of deception.

Thirdly, the maternity clinics must also be held to blame. These institutions are often undermanned and are in the hands of short-time officers who themselves possess little more knowledge than the students whom they instruct. Moreover, the more lax these institutions are, and the less supervision they enforce, the more popular they become

with the student. The latter is often pleased to receive a certificate of full attendance when in reality his name has only been entered on the books for the time specified. It is a regrettable fact that the maternity which tries to enforce a strict attendance and a scientific teaching is apt to lose its popularity, and its students transfer their patronage to some more worldly-wise, if less scrupulous, competitor.

Suggested Remedies.—Improvement in the students' knowledge will only occur when the teaching bodies discover that the art of obstetrics is a very difficult one to learn and that it cannot be acquired in a shorter period than a six months' course of close attention to a maternity institute. A register of such attendance should be kept and the proportion of attendances should not fall short of that required for the general hospital. Further, there must be no clashing between the hours of attendance in the general hospital and the maternity clinic. The clinics should be subject to close inspection, and strict attendance and attention to work must be insisted upon. The compulsory conduct of a specified number of confinements should be abolished. It is no more reasonable to insist on this than it would be to gauge the efficiency of a surgical student in accordance with the number of ulcerated legs he had dressed. The present plan of permitting junior students to attend cases without supervision should be abolished. A student should not be permitted to enter for his Final Examination who cannot show evidence of being present at the attendance of a certain number of abnormal deliveries, of which two should be forceps deliveries.

In reference to some of these suggested improvements it may be objected that a six months' practical course, honestly carried out as above described, would be too great an inroad on the present medical curriculum and would tax too heavily the time at the students' disposal. My answer is, that it would make a very serious change in the practical education of the student, but such change is a necessity and a minimum demand.

In the Rotunda Hospital the extern maternity assistants are selected from men who have undergone such a course, yet the practical efficiency of the junior falls far short of that possessed by the senior extern assistant. Again, the assistant masters are chosen from amongst the extern maternity assistants, and they, at the end of their term, are, without exception, more skilled practical obstetricians than the junior officers. Indeed the experience gained in this hospital shows that the good effects of practical work are more evident than in any other branch of surgery or medicine. It is because of this knowledge that I plead with all my power for a six months' course of practical instruction. It seems to me that such a course could be made easy if men were compelled to take out their general hospital course during their second, third, and fifth years, whilst the fourth year should be left for the study of the different specialities. The examina-

tion in obstetrics and gynecology could be completed at the end of the fourth year, and with this important subject out of the way the student could then devote his entire energies to the perfecting of his practical knowledge in surgery and medicine.

Finally, in respect to the obstetrical and gynecological examination, there is at present too large a proportion of marks allotted to the clinical act. The clinical examination of necessity must be a restricted one and the student can very easily master the practical details which will enable him to obtain high marks. This high percentage is sometimes sufficient to counterbalance poor scoring on his paper and in his *viva voce*, and may make his total marks amount to a qualifying percentage.

LII.—CLINICAL TEACHING IN MIDWIFERY AND DISEASES OF WOMEN.

By J. S. FAIRBAIRN, F.R.C.P., F.R.C.S., London.

I PROPOSE to discuss how we can best fit the student for the general practice of medicine by the teaching we give him in midwifery and the diseases of women. I do not intend to consider advanced teaching or research work.

A revolution in the teaching of practical midwifery was effected by the recommendations issued by the General Medical Council in 1906,* as the result of a special report by a committee presided over by Sir John Williams. That report marks an epoch in that it put an end to those bad old days when the student, fortified by a smattering of anatomy, physiology, organic chemistry, and the cognate sciences, sallied forth into an out-door maternity district to pick up, or not pick up, as the case might be, the practice of midwifery.

There were two essential points in these recommendations—(1) That every student before commencing the study of practical midwifery should have held the office of clinical medical clerk and surgical dresser. (2) That he should have had adequate indoor instruction in the conduct of labour before attending extern cases.

These recommendations are so obvious that we can but marvel that they were needed as recently as twelve years ago. Until the student has been taught the methods of general medicine and surgery he cannot apply them to the special conditions of maternity practice. If percussion is not often required, inspection, palpation, and auscultation are essential to the investigation of every midwifery case, and it is clearly an advantage that the student should know when a patient is ill, what may be learnt from the pulse, and how to test the urine.

* Report in *British Medical Journal Supplement*, 8th December 1906, p. 316.

The most important lesson the student learns while devilling for the surgeon in the operating theatre is not the details of operations he will rarely be called on to perform, but the thorough drill in the technique of surgical cleanliness which he will apply every day in his midwifery practice. Yet pressure from the General Medical Council was necessary before the examining bodies responsible for the training to be given to the general practitioners of the country could be made to insist on the surgeon teaching the student the technique to be applied in his maternity work before, and not after, that work had been done. The second point, that the practice of midwifery should be first taught within a hospital, like the practice of medicine and surgery, is too evident to call for discussion.

Taking these recommendations as representing the irreducible minimum in the teaching of practical midwifery, I would urge that the clinical study of the diseases of women should be carried on at the same time. Midwifery, as the study of the normal and abnormal processes of reproduction, should go hand in hand with the study of the diseases of the organs concerned in reproduction, especially as so many of these diseases—the infective and mechanical lesions, for instance—are the immediate result of abortion or labour. For this reason the tendency, more marked in America than in this country, to make gynecology a branch of general surgery, and to advocate its divorce from midwifery seems to me a retrograde move so far as the training of practitioners in general medical practice is concerned. Professors of gynecology, who disclaim any special knowledge of midwifery, may be excellent abdominal surgeons, may add greatly to our knowledge of the subject and stimulate research, but my point is that they are not the teachers to train the general practitioner-to-be. I would rather retrace our steps and go back, if not to "Professors of Midwifery and the Diseases of Women and Children," to an understanding that midwifery should not end when the infant begins its separate existence. This I urge, not with the view to taking the diseases of infancy back from the physician for diseases of children, but in the hope that something may be done to prevent the infant having need of his services.

I would like to see separate courses of systematic lectures given up for a single course comprising both midwifery and the diseases of women; it would save much needless repetition and give a wider and broader outlook to the student. Cause and effect would be considered together—labour and abortion in the production of pelvic disturbance, and pelvic disease in the production of sterility, abortion, or abnormal reproduction in any form.

Many debatable questions as to where to include extra-uterine gestation, the pelvic puerperal infections, and the results of injuries during parturition would be settled by taking them in their logical

sequence, and the teaching of both the obstetrical side and the gynecological side would be made much more impressive. So also the clinical observation of the organs in the pregnant and non-pregnant state, learning how to avoid, and seeing the consequences of, the injuries, infections, and complications of childbed, and generally absorbing at one and the same time the physiological and pathological processes of reproduction will give the student a far more accurate perspective than if midwifery is done one year and the diseases of women the next. Moreover, the simultaneous practical study of the two branches of the subject, especially if under the same teachers, will help to foster that preventive bent of mind towards all abnormal processes, which is the attitude we must aim at producing.

It is the development in the student of what I may term "the preventive bent" that I would make the chief motive of this paper, because I think that in teaching the practice of midwifery we have special opportunities that should not be missed. The trend towards the preventive side in medicine has now reached a stage which makes it incumbent on the teachers in all the later subjects of the curriculum to assist the movement. It is not a simple matter, because it is difficult to give the necessary object-lessons, and naturally the student's attention is much more attracted by cases of serious and unusual disease, especially if they have dramatic and startling accompaniments, than by the less striking investigation for the causes of possible trouble to come.

Attendance on the conduct of labour in the maternity hospital and the extern district is not sufficient; the other machinery, of what is termed "a maternity centre," must be used in the teaching and must be made compulsory. The clinics for watching the pregnant women and the mother and infant afterwards, with home visiting and other social organisations, must, together with the hospital, be made a model scheme and a practical demonstration of prevention applied to a section of the community. The improvement of the health and physique of the nation must begin from the start of life—from birth or even from conception — and we midwifery teachers are responsible for the time when preventive work originates.

We can illustrate, by the care of the pregnant woman, our efforts to guide the pregnancy to the safe delivery at term of a healthy British subject. The prevention of abortion, the foreseeing of complications in pregnancy and labour, and the devising of means of avoiding them as well as of meeting them when they arise, and then the after-care of mother and child, form together a most striking object-lesson which can be followed in all its stages in the various sections of the maternity centre. The investigation of causes of abortion or dead-birth, with a view to the prevention of their recurrence, can be demonstrated, and other cases, in which success has

rewarded the measures taken and has resulted in the birth of a living child, can be shown. Any complication in labour that might have been foreseen can be pointed out as a failure in prevention. Why was it not foreseen? If foreseen, what could have been done? That our teaching in the past has been wanting in this preventive atmosphere is often illustrated in reading examination papers, or in reports from practitioners and house officers. For instance, the light way abortion is regarded, and the scanty excuses given for suggesting its induction and that of premature labour, even a little self-congratulation on having delivered a difficult case, though "the child was dead of course," all show that labour ending in a still-birth is scarcely appreciated as an obstetric failure because we have not sufficiently emphasised that the bringing of the pregnancy to the birth of a living and healthy child without danger to the mother is the only criterion of success.

We have to train the student in a late stage in his career when the wider outlook is more readily developed, and we must therefore do our best to encourage it, and agitate for our own encouragement by the examining bodies. Let the recommendations come from the midwifery teachers and be firmly pressed on the General Medical Council. Let us ask that the attendance of students shall not merely be on indoor instruction in the conduct of labour, but on antenatal and postnatal clinics, and let us ask our colleagues engaged in pædiatries and public health work to co-operate with us in the agitation.

The question as to where obstetrics ends and pædiatries begins need not be discussed now—it will settle itself in time with experience of working. But it is clearly our duty to encourage the study of the "well" infant and how to keep it well so long as it may be in our charge, and to stimulate our students to follow the infant through to the school clinic age.

I have only discussed general principles. Their adoption will involve variations in detail in each medical school to meet its special circumstances—the number of its students, the material available and its accessibility, and other factors. With one of my colleagues I contributed to the medical press a report of the first two years' working of the system at St. Thomas's Hospital, modelled on the recommendations of the General Medical Council, and can refer anyone who wishes for details to that paper.* Since it was written there have been considerable developments in the social and preventive work, but the difficulty throughout has been to get the student to interest himself in a side which has no examination value. We have two clinics for infants up to twelve months, and one to continue their observation to school clinic age; at present the two former are officered from the

* *British Medical Journal*, 10th October 1912, p. 1006.

maternity department, the latter from the children's department. Even before the war the student would barely pay an occasional visit to a department for seeing "well" babies; he took little interest in "wasters" at any time, and none at all when it was but a matter of trying to prevent them becoming "wasters." The house officers, on the other hand, always became extremely interested; they recognised the value of the experience both for family practice and for future appointments as school clinic officers or other work in the public service.

If the medical schools are to meet the demand for medical practitioners for the many appointments that are likely to follow the establishment of a Ministry of Health they must be prepared to train them for the work, and I think the question as to whether pædiatrics and the study of childhood ought not to be made an examination subject is one that will have to be considered, and is one in which we ought to take an interest. The future physique of the race is largely determined during development *in utero*, during infancy and childhood, and I would urge that our teaching should be remodelled with the view that something must be done to make teachers and students devote more attention to this period of life. The necessity for some such addition to the curriculum, whether it should be for the undergraduate or postgraduate study, and how it is to be carved out of obstetrics, diseases of children, and preventive medicine, urgently calls for consideration. It would be ignominious for the medical profession were it forced on it from the outside.

LIII.—REMARKS ON THE TEACHING OF GYNECOLOGY.

By VICTOR BONNEY, M.S., M.D., B.Sc., F.R.C.S., London.

I THINK that a good deal of the teaching in obstetrics and gynecology should be relegated to an earlier stage of studentship than is now the case.

For instance the anatomy of the female genitals should be taught so thoroughly in the dissection-room and anatomical theatre that there would be no need of reiteration in the obstetrical and gynecological text-books and lectures. Clinically, the diseases of the female genitals are, I should say, about ten times as common as those of the male, yet the student is exhaustively taught male anatomy, but very little female anatomy, in the dissecting-room.

Then embryology: the development and size of the fœtus: the anatomy and development of the placenta. He should know all these things before he enters on their clinical aspect.

The physiology of the female organs is not taught by physi-

ologists. It should be; puberty, adolescence, menstruation, and the mechanism of labour are purely physiological subjects. Why should the physiological text-book spread itself over several chapters when dealing with intestinal peristalsis, and say no word on the equally important uterine peristalsis.

Again, general pathology should deal with puerperal sepsis and pregnancy toxæmia, from the general point of view, and the histologist should include the microscopical appearances of uterine tissue, tube, vagina, ovary, corpus luteum, etc., amongst the subjects which he teaches.

If these things were done, the student would have learnt a good one-third of obstetrics and gynecology before he came to the regular course on those subjects; and—and this is the most important of all—he would cease to regard them as isolated subjects, divorced from general medicine and surgery as though the diseases with which they deal were fundamentally of a different nature to the rest of disease.

LIV.—THE TEACHING OF CLINICAL GYNECOLOGY.

By N. T. BREWIS, Gynecologist, Edinburgh Royal Infirmary.

IT is not necessary at this time of day to emphasise the importance of the subject to the student who is shortly to become engaged in the exercise of his profession. Women form a large proportion of the patients a medical man is called on to treat, and, to be useful in his calling, it is essential that he should be familiar with the ailments peculiar to them. He should not only be able to recognise the affections from which they suffer, but should also be able, if necessary, to give advice regarding, and to treat many of, those conditions. Every student should therefore have opportunities of becoming conversant with the various diseases of women, and should also know how to treat them. Practical knowledge of the subject must be obtained clinically at the bedside and in the operating theatre, and for its acquisition time and material are required. It may be affirmed that gynecology is the work of the specialist and not of the ordinary practitioner, and that it would be wrong to spend much of the student's time over it. While it is true that major gynecology must belong to the specialist, whose training is a post-graduate undertaking, it is only right that the student should see and have instruction in major operations, though he should have no intention of ever performing them. How much time do students give to their surgical course, and how many of them in after-life ever practise surgery? The practice of minor gynecology is quite within the province of the well-qualified practitioner.

The importance of practical gynecology entitles it to more consideration regarding the time allotted for the study of it by the student. The systematic lectures which the student receives before taking up practical work are all that can be desired. He begins his practical course with a good general knowledge of the diseases of women. The deficiency in his training is entirely in the practical part, and to remedy this shortcoming it is necessary that he should have more time at his disposal, and that the teacher should have more material at his command. At present, in the Edinburgh School, each student attends a short course of practical instruction of five weeks' duration. For a satisfactory training in practical gynecology a course of three months is needed. Abundant material for the teacher in Edinburgh could easily be obtained if the Managers of the Royal Infirmary would make Ward 34 a gynecological ward. This ward in the gynecological pavilion was built for gynecology, but has never been used for that purpose. By the acquisition of this ward the staff of teachers would be increased, and, with the additional material, the Edinburgh Gynecological School would become the strongest in the country. Edinburgh students would not require to go to other schools for their practical gynecology, and patients would no longer find it necessary to seek treatment elsewhere. In one of the present gynecological wards there is always a waiting-list of over two hundred patients.

Given sufficient time and material, all difficulties in the teaching of practical gynecology would disappear. Each teacher would arrange and systematise the instruction given according to the plan which he found best. Each student requires to be taught individually, and should have opportunities of becoming familiar with all the methods of clinical examination. He should be taught to recognise and describe the physical signs of diseased conditions and to learn the significance of symptoms. He should receive instruction in treatment, should witness operations, and perform minor ones.

The work of instruction should be divided between the gynecologist and the clinical tutor:—

1. *Instruction given by the gynecologist and the assistant gynecologist* should include instruction in physical signs of all the gynecological organs and their affections. As all the organs are concealed, it is essential for the student to cultivate specially the sense of touch; accordingly, all the methods of bimanual examination must receive special attention. Diagnosis, in many cases, cannot be made without inspection of the affected parts; therefore the student should be taught to use the vaginal speculum, the cystoscope, and the proctoscope. He should also be fully instructed in the examination of the abdomen. Before the whole class the operator should explain each step of the operation that he is performing, and, under the direction

of the Chief, the student might be asked to perform some of the minor operations, should learn to handle the curette, sound, and volsella, and to pass the catheter.

2. *Instruction given by the Clinical Tutor.*—The clinical tutors, under the supervision and direction of the Chief, should perform a large and important part in the practical instruction of pupils. Their work should include tuition in the surgical anatomy of the pelvic organs, demonstrations of the naked-eye and the microscopic appearances of all the pathological specimens removed at operations, and the naked-eye, microscopic, and bacteriological characters of the various discharges. They should demonstrate the various instruments used in gynecological work, and explain their uses.

These demonstrations could be conducted in the evenings before the whole class assembled. The clinical tutors should also, along with the house surgeons, superintend and assist students in their case-taking. Case-taking forms a very necessary part of the student's training. Each student should take at least one case in a very thorough manner. He should be given a patient, and should consider her his special charge and interest until she is discharged from the hospital. Not only should tuition be directed towards a full and correct record of the case, but the significance of symptoms and of physical signs should be explained. The student should make a point of being present when his patient is operated on, and should, with the aid of the house surgeon, add to his case a description of the operation and of the structures removed. If a microscopic or bacteriological examination is made, he should incorporate a description of it in his record. The progress of the patient and her condition on leaving hospital should complete his case.

A course of training such as I have outlined should furnish the student with a good groundwork of clinical gynecology. The work which a student does, and the efficiency he acquires while taking out his course, should, if satisfactory, exempt him from having to appear for the subject at the Final Examination.

Out-Patients as Teaching Material.—The authorities should seriously consider the advisability of instituting a gynecological out-patient department in the Royal Infirmary. Such a department would not only relieve the work in the wards and prevent the long waits of patients there, but would also make a valuable addition to the teaching material. The department could be conducted by the assistant gynecologists in turn, and each day four or five students could be in attendance. This and similar work at the dispensaries would augment, in a useful manner, the teaching in the wards.

LV.—THE TEACHING OF OBSTETRICS AND GYNECOLOGY.

By JAMES HAIG FERGUSON, M.D., F.R.C.P., F.R.C.S.

I CONSIDER it is a mistake to separate the teaching of midwifery from that of gynecology. The two should be taught in a combined course under the supervision of one teacher who is qualified to teach both subjects. Apart from their intimate relationship, this saves much repetition and overlapping in dealing with the anatomical and physiological aspects common to both subjects.

I believe that the principles of midwifery can be taught in a course of fifty systematic lectures, provided that a proper system of clinical instruction is superadded. The three months' summer course formerly given by Sir Halliday Croom in Minto House was a practical demonstration that this can be successfully done by a competent teacher. It is true that one could not undertake both midwifery and gynecology in that length of time without duplicating the lectures, *i.e.* giving extra lectures on gynecology in the afternoons.

If obstetric anatomy and embryology have already been taken up in the classes of anatomy and physiology, and more faith reposed on the very adequate teaching that is given in the pathology class, a good deal that is now taught on these subjects in the midwifery class could be left out. Consequently only those matters which have a direct obstetric bearing need be considered in the systematic midwifery lectures, on the principle of "pointing a moral and adorning a tale" on the substratum of a certain amount of previously acquired knowledge. The tendency is to go into the question of anatomy and embryology in midwifery lectures as if the student had absolutely no previous acquaintance with the subjects.

It may be justly contended that every course of instruction should be complete in itself from the rudiments upwards, and I for one would strongly approve of an alternative scheme whereby a course of twenty-five or thirty lectures might be given during the summer session dealing with obstetrical and gynecological anatomy and physiology, to be followed by fifty lectures on the rest of the subject in the succeeding winter session—with, say, twenty lectures on gynecology in addition—to complete the course. Those who had attended satisfactorily the summer course might possibly be allowed to attend their cases during the autumn, which would help to save congestion later on.

The student has to be turned out as a practical man fitted to deal with the normal and abnormal obstetric cases he is likely to meet with in practice, often perforce entirely on his own responsibility. For this reason the practical and clinical teaching of midwifery is of paramount

importance. I put more value on this clinical teaching and demonstration of cases in hospital than on the personal attendance on so many cases of labour. I think the number of cases attended outside could be safely diminished, but each student must have the opportunity (1) of seeing some normal cases properly managed, (2) of observing the conduct of some instrumental and complicated labours, besides (3) of following intelligently in the wards the after-care in the puerperium. All this can be secured by hospital attendance. I strongly advocate *one month* in a maternity hospital residence or hostel, in or near the hospital, and, in addition, an attendance of another month (preferably two) on the daily cliniques. During his month's residence he would be enabled to see all the night cases, and most of the complicated cases occur after the ordinary man's working hours. During the other month (or two months) he could live anywhere and come to the hospital only for the regular cliniques.

If centralisation of the outdoor midwifery work were established it would go far to meet the present difficulties of outside cases. The importance of the students being made to keep a record of the cases they attend can hardly be too strongly insisted on.

A new and enlarged maternity hospital is essential. The present hospital is not up to the standard of modern requirements, and is far from being a credit to Edinburgh.

As regards gynecological teaching, I do not agree with those who expect the general practitioner to be as proficient in gynecology as he ought to be in obstetrics. Gynecology is, after all, a specialty, and one requiring very special training. A general knowledge of the main principles is all that is required to be imparted, and a sufficient amount of clinical training to enable the student to recognise (1) normal conditions, (2) the commoner diseases, and (3) the technique of the treatment of minor maladies.

There is no doubt of the great advantage to the student of a consecutive set of lectures on gynecology—a great improvement on the one-lecture-a-week system of previous days.

The clinical teaching of gynecology is of course the great difficulty, when it has to be extended to all and sundry, owing to the necessity of strictly limited cliniques. In dispensary cliniques the patients and pupils are apt to follow an inverse ratio. So long as there are few pupils there are plenty of patients, and *vice versâ*, and much experience and tact are required on the part of the teacher to secure justice and consideration for patients and pupils alike.

The present teaching arrangements in the Royal Infirmary are a great advance on previous methods. It seems to me they meet the bare requirements of the situation. Of course every specialist tends to magnify his own department and would fain have more time assigned to his subject. Students specially interested in gynecology

can always get more opportunities for instruction, and every encouragement is given to such.

I am strongly of opinion that in determining the marks at the Professional Examination the class records of the work done by the student should be taken into consideration in adjudicating the results, and this is of special importance, it seems to me, in the examination on a subject like clinical gynecology.

DISCUSSION.

Dr. Ballantyne.—I have been teaching midwifery since 1885. For twenty-six years I taught in the extramural school. During the first thirteen years I made many mistakes, the first of which was in trying to put the whole subject into my own lectures, *i.e.* in trying to act as a text-book. The second was in relegating the practical part of the teaching to the tutorial classes, a non-compulsory attendance upon which was all that was required of the students, with the result that the majority of the class were left quite untaught in the practical part of the subject. The third mistake lay in trying to imitate the attractive features in the lectures of popular teachers. To get rid of the dictational element I had my lectures printed, and found the plan worked well. I *gave* them what I used to dictate, saying, "Add to this; make a synopsis for yourself, but in the main part of the hour look at what I am doing with my hands." The second change was to make the lecture almost into a practical class, and the tutorial into a quiz class, while in the Maternity Hospital I went over the same ground clinically, and amplified what I had fallen short of in the lecture class. For some seven or eight years I conducted a class between the summer and winter sessions, which I called an "operative" class. In it I utilised as far as possible different means for teaching it practically—models of various kinds, etc.

I would join issue with Sir Halliday Croom in what he said as to there being enough cases in Edinburgh for the teaching of all the students. The facts are these: in 1916 there were 6600 births in Edinburgh; in 1917 there were 5800. In other words, there was a drop of something like 800 births in one year. Fortunately, from the teaching point of view, the number of cases dealt with in the Maternity Hospital did not fall. The explanation is that the general practitioners who would have looked after them were away and their cases were distributed, so that we in the general hospital did not feel it. 17·4 per 1000 to 14·7 per 1000 in one year is, of course, an exceptional drop. Still, we have got to arrange for as many students as we ever had, with a birth-rate which is steadily falling. We must consider, too, the death-rate of the newly born infant: can the pædiatric physicians teach about the new-born infant in the first three weeks of life? It is not being taught. Sir Halliday Croom and I have discussed this several times, and we made up our minds that three lectures would be set aside for this subject alone. This, however, has never been achieved for lack of time. The matter is urgent. Forty per 1000 living new-born infants die in the first month; 123 per 1000 die in Edinburgh in the first year. In the first week the figures are even more striking. The Edinburgh Public Health Officer states that 204 infants out of 604 die here in the first month; and of these 204, 110 are

entered as having died of "immaturity." Is that a sufficient death certificate which gives no information at all beyond the fact that those children were born before time? We have the *cause* of death still to find out, and I think it is our duty as obstetricians to lay some emphasis on the subject of the new-born infant.

The Milne Murray Lodge might have succeeded had it been begun in a less ambitious way. As it was, it was a novelty, and the students did not enter it in sufficient numbers to make it self-supporting. It was impossible to carry on a hostel for fifteen or twenty students when it was only occupied for two or three months in the year. On the whole, I incline to think that it is advisable to conjoin midwifery and gynecology in our chair.

Dr. W. Fordyce.—The question seems to be: What is the best method of teaching a student to fit him for the work he will meet in his medical practice afterwards? How many lectures should there be, and how best can the clinical part be carried out? I agree on the whole with what Sir Halliday Croom said. It is necessary that anatomy and physiology be considered afresh by the student in his midwifery course; the female anatomy and the physiology of conception and pregnancy generally are not taught in a way to be of any value to the obstetrical student. The course should be divided into two parts, and in the second part the students should be divided into groups, and should come every day to the Maternity Hospital. I agree with Dr. Haultain on the importance of students actually seeing cases conducted in the Maternity Hospital. Still, I think that a great deal can be learned by merely going round the hospital ward.

As to out-door work, a man should reside for a certain time in some home in connection with a maternity hospital. And I think that that is still possible in Edinburgh. In Edinburgh there are six or eight different institutions all supplying maternity out-door work for the students, and the consequence is, that the men spread themselves over these institutions. I have pled for years with the Maternity Hospital authorities to centralise the teaching of out-door midwifery in Edinburgh—to have it taken from the dispensaries, and to have one definite system whereby a student knows that if he goes into the Maternity Hospital he will stay there for a month and will see all the work that is going on, and will in that month get out his requisite cases. If that were done, I am certain that a large proportion of the men would take advantage of the opportunity. At present, at a dispensary, a man does not get all his cases for perhaps three or four months.

By a daily visit in the latter part of their midwifery course to a hospital, where they can see the patients, the students learn a great deal. In conducting a case, for example, you can demonstrate the turning of the fœtus *in utero* almost as well as on a model in the tutorial class.

Dr. Haultain thinks three cases are enough for a man to attend. I think there ought to be more, even if they are all normal. Confidence is wanted more in midwifery than in almost any other department, and confidence can only be got by repeated attendance on cases. I think with Sir Halliday Croom that the cases should be carefully recorded, and if there were strict supervision of the student's reports, the importance of this department of his work would be impressed upon him. All that you can hope to do in gynecology is exactly what Dr. Barbour said at the conclusion of his remarks. If we can teach a man such confidence that in making an examination he can

say to the patient, "There is nothing wrong," or, "There is something that is beyond me," I think we shall have gone a very long way.

Dr. Simpson.—The mortality of infants during the first month of life is a point which must be taken up very seriously: there is a big waste of life that should not take place. Judging from the cases I have seen handled by midwives, my experience has been that they do not yet receive adequate training; and there ought to be some co-operation between the Sick Children's Hospital and the Maternity Hospital in the training of nurses as well as of students. The nurse has an enormous influence in a household, and her advice as to feeding the infant is often taken in preference to that of the young doctor attending the case.

Dr. Oliphant Nicholson.—I have always held strongly that the obstetrician should be a physician first and an obstetrician afterwards. Young infants develop all sorts of affections that the ordinary obstetric surgeon is quite willing to admit he knows very little about; the care of infants during the first month of life is really much more a medical than a surgical matter. Young infants die from improper feeding, and a midwifery nurse often takes upon herself to advise the mother what to feed the baby on. The doctor, however, is often quite willing to delegate that duty to the nurse. The young infant should not get out of the hands of the obstetrician too soon: during the first month the man who attends the confinement should be quite competent to deal with all the ordinary emergencies which occur, and to safeguard the child's life from them.

Dr. J. S. Fowler.—I have sometimes felt the care of young infants has to a certain extent been lost sight of by obstetricians. The difficulty in Edinburgh is that there is no institution suitable for dealing with these very young infants. The mother is kept at the Maternity Hospital until she is well, but she is, I think, then discharged without very much reference to the condition of the baby. It is a matter of experience that such young infants do not do well in the wards of the Sick Children's Hospital. They require quite a different kind of nursing from the older children, and a great deal more of it—almost the whole time of one woman to each infant: we really ought, also, to have wet nurses for them. They are, too, greatly exposed to infections in the Sick Children's Hospital. For the treatment of these infants we want some institutional system based on the continental plan.

Mr. Miles.—It is an open secret among those who have attended the discussions regularly that midwifery was one of the subjects to which we looked to save time. It could be got, we hoped, into something less than a whole winter term; and I am disappointed to find that the teachers of the subject demand the whole one hundred lectures course. Most of us remember the Minto House summer course, given originally by Sir Halliday Croom, which proved that midwifery could be taught for all practical purposes in a three months' course.

In various subjects it has been suggested that the course be divided into a junior and a senior course, to be taken at different times in the student's curriculum. Could that not be done in midwifery? Could we co-ordinate the professor of anatomy to give that part of his course which bears on midwifery in the fourth year instead of the first. And so with physiology.

In that way some time might be saved in the midwifery course. It would help us in framing our report if we had information on these points.

Dr. Barbour's remarks about the use of the class work as a means of minimising the importance of the Professional Examination are most valuable. The student's case records might well be used as part of the material for determining the results in the Final.

Dr. Sillar.—I have been struck with what has been said as to the amount of clinical material available. All the speakers were not at one in regard to the amount of material available, but from one of the papers I gathered that there was no deficiency. Midwifery is the only subject for which our students go away for their knowledge, and it looks to the outsider as if there was a want of co-ordination or organisation; and what I want to hear from some of the experts is as to whether the method of the Maternity Hospital management is in their opinion a good one, *i.e.* whether the system of a short tenure of office by different teachers is really one which conduces to good organisation, or whether, on the whole, it is a disadvantage.

Professor Lorrain Smith.—Dr. Tweedie in his suggested remedies says that the art of obstetrics cannot be acquired in a short period of six months of close attention to a maternity institute. The Committee would like to have a definite expression of opinion on this point from the teachers of obstetrics. I should also like to have their opinion on the question raised by Dr. Fairbairn of teaching in the maternity centres. I regret that Dr. Ballantyne did not deal definitely with this point, because a great deal of his work has lain exactly in the direction which Dr. Fairbairn sketches as the line of development we ought to adopt.

Dr. Ballantyne.—I think something ought to be allowed for the careful watching of pregnancy cases: in that way the knowledge of the student would be extended in a big department of midwifery. I have no difficulty in getting some of the students to come to the antenatal clinique although it is not compulsory, because they see how much it helps them.

Professor Lorrain Smith.—Is there no criticism of the method the students adopt of rushing away to another centre for, say, a fortnight?

Dr. Ballantyne.—That is where the whole thing is wrong. It should not be the idea of the student to see so many cases in so many weeks. The university should make him extend his knowledge of cases over a definite number of months. The practical midwifery course is and ought to be a three-months' course.

Dr. Haultain.—Dwelling in the hospital is essential for the practical knowledge of midwifery, but it must be made compulsory. The reason why a number of our students go to other places is because they can acquire that residence and get in the requisite number of cases in a certain time. By having a residency we would get our men to stay here. This residency would also attract students from other schools.

I do not agree that you can show students on a dummy how complicated cases should be treated. It gives a man confidence to see a patient with placenta prævia being treated. From that point of view it is important that

the men should *see* all the complications. We are a great centre here for complex cases, and in his compulsory month of residence the student would see and study complications that he would otherwise never have an opportunity of observing.

We have not nearly enough out-door cases to give the students twelve cases each, for we have also a large number of nurses to teach. The Maternity Hospital is the centre for that teaching, and every case that a nurse attends with a student does not count for the nurse. A few cases on his own is quite enough for each student after having conducted his cases in the hospital under direct supervision.

I cannot see how you can give a course in midwifery and gynecology in fifty lectures. Midwifery has this difference from the other subjects, that it must be known from top to bottom because the practitioner has to be thoroughly versed in all the complications. A preliminary course of twenty-five lectures might be arranged in order to allow the student to come when he wishes to the Maternity Hospital, and a subsequent course of fifty lectures.

Dr. Barbour said in reply.—With regard to the question of residence in the Maternity Hospital, stress was laid upon the word "compulsory." You may bring a horse to the water, but it is another thing to make him drink. The student might live in the hospital in the winter months, but does that necessarily mean that he would do the work any more conscientiously than if he were not resident there? A residence in the vacation is of course *very* desirable, and would be made full use of. But during term time the student residing in the Maternity Hospital must attend his lectures during the day, *i.e.* his work occupies him from 9 A.M. to 6 P.M., so that the only time he can attend the Maternity Hospital and see the cases is during the night. Someone suggested that a sort of middle course of having the students staying near the Maternity Hospital would do a great deal for them; and I think it would, in that the student would be at night near the hospital and could be sent for. But I think it is quite a mistake to go away with the idea that you can *compel* a man to have the benefit of residency in the Maternity Hospital during the winter session. I should like to know to what extent the residency in Dublin is made use of. I believe that during the winter session the students do not make use of it, although it is just at their door, owing to the difficulty of combining with it their other medical work.

A very important point was raised by Dr. Haultain as to whether you will get a man to come to Edinburgh to take up midwifery and gynecology. He is quite right that the attractive part of the work is the gynecological part. The great difficulty that I see in returning to the former state of affairs is, that the clinical work in the hospital under the new conditions has increased so much that I cannot see where the necessary time is to come from: If the professor had to teach both gynecology and midwifery, it would be impossible for him to teach the elements of gynecology to the students as it is being taught to-day. He would have to hand it over to the assistant gynecologist or to the tutor.

It is a fact that the interest the students take in their gynecological work has increased very much since the clinical examination was introduced. During recent years one notices a distinct improvement in the knowledge of the graduates in clinical gynecology. As compared with those of twenty years ago, the strides they have made are enormous.

RECENT ADVANCES IN MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

EDWIN MATTHEW, M.D., AND JOHN EASON, M.D.

Syphilis of the Lung.

In 1858 Virchow said: "Some patients die of so-called tuberculosis for lack of antisyphilitic treatment." The abundant literature on the subject of pulmonary syphilis has recently been surveyed by H. Lisser (*Amer. Journ. Med. Sci.*, vol. clv., No. 3, p. 356), from the time of Paracelsus in 1500. In comparing the large number of cases of pulmonary syphilis reported during the period 1500 to 1800 with the comparatively small number reported in the last hundred years, the elder Fournier speaks of "the credulity of our fathers and the incredulity of our contemporaries." In the older epoch absolute confusion existed until Laennec differentiated pulmonary tuberculosis and opened the way to the recognition of a true pulmonary syphilis. At the end of the nineteenth century Osler states in his text-book: "Clinically pulmonary syphilis is not of much importance, as the cases can rarely be diagnosed, and the symptoms which arise are usually those of bronchiectasis or of chronic interstitial pneumonia."

After the discovery of the spirocheta pallidum and the complement-fixation test of Wassermann it seemed that a complete solution of the difficulties in differential diagnosis was at hand. But such is not the case. Schaudinn's spirocheta pallidum has not been found in the sputum expectorated by pulmonary syphilitics, and would be with difficulty differentiated from the numerous spirochetes normally inhabiting the mouth. It likewise remains for someone to find these organisms with any frequency at autopsy in the lungs. According to Lisser, such an investigation of a large series of autopsies upon syphilitics would go far to dispel the prevalent ideas as to the rarity of lung syphilis. It might have been expected that the Wassermann test would be of considerable assistance, but this is frequently not the case. A positive test does not indicate that the pulmonary condition is luetic. It merely leads to suspicion that the phthisis has a specific etiology. Roentgenographs are disappointing in the sense that they do not provide us with an exclusively unique picture. They are of value in a negative sense, for they decidedly help to exclude pulmonary tuberculosis.

The X-ray plate of a luetic lung is quite unlike that of a Koch infection, but it is not unlike many other pulmonary conditions, all of

which result in peribronchial thickening. Gummata present striking shadows, but have to be differentiated from malignant growths. It is obvious, then, that to-day our knowledge of pulmonary syphilis and our ability to diagnose it leaves much to be desired.

Pathology.—The principal types of lesions in acquired syphilis of the lung are (1) gummata, (2) changes in the connective tissue, (3) predominating alterations in the parenchyma. Any combination of these may also be found. The gummata resemble those found elsewhere in the body and may readily be mistaken for tubercles. Though different details of the histological picture have been advanced as points of differentiation, the presence of the tubercle bacillus is the only final proof. The second group comprises those cases in which fibroid induration is the outstanding feature. This is essentially a chronic process, a primary connective tissue proliferation considered by Pankritius as characteristic of lues, for in other diseases of the lung which have hyperplasia of the connective tissue it is secondary, as in chronic pneumonia of stone-cutters and grinders. The implication of the parenchymatous structures in lung syphilis is essentially a pneumonia with fibrinous exudation.

Symptomatology.—The onset is very insidious and usually entirely ignored and unrecognised. This is in striking contrast to the usually rich and varied functional disturbances of a pulmonary tuberculosis at a similar stage of development. In syphilis of the lung, the process is far advanced before any change in the general health is noticeable. The patient preserves an appearance of strength, his complexion and colour are good, his facies is normal, his appetite remains, and he holds his weight very well. It is exceptional for syphilis to produce phenomena of general intoxication in any way comparable to the severity of the lesions from which the patient is suffering, even though there be enormous destructive ulcerations. Syphilitics do lose weight and appetite, become weak and enfeebled, but by no means to the same degree as would a tuberculous individual with correspondingly severe lesions. Mediastinal adenitis is almost constantly absent in early cases, according to Fournier. As a result, the reflex action of the pneumogastric nerve is not excited and the usual symptomatology of early tuberculosis does not occur. If cough does occur it is probably due to laryngeal, tracheal, or bronchial lesions. But as gummata, fibroid, or parenchymatous processes increase, functional disturbances will arise, and these are mostly dyspnœa, cough, and expectoration. Dyspnœa is quite common, and frequently very severe. In some cases it is due to complicating stenosis of the bronchi or trachea. Neither the cough nor the sputum have anything characteristic about them. The cough is often spasmodic like the dyspnœa. The sputum may be little in amount, or very abundant, purulent, greenish, and of foul odour from bronchiectatic cavities. Repeated examinations will be

consistently negative for Koch's bacillus. Elastic tissue may be present from destruction of lung tissue, and even pieces of gumma may be coughed up. Hæmoptysis is less common than in tuberculosis, probably due to the chronic obliterative endarteritis. Blood-streaked sputum is not uncommon. Night-sweats and pyrexia are the rule, though the fever seems to be more variable than in tuberculosis. Loss of weight always follows as the disease progresses, but usually to a less degree than in tuberculosis. Emaciation is exceptional but may be pronounced. The physical signs are in no way characteristic—are identical, in fact, with tuberculosis. Cavity formation is less frequent in syphilis. In a general way one might say that syphilis of the lung is more frequently unilateral, more often circumscribed, and does not show the same predilection for the apex of the lung as tuberculosis. All these points are of meagre value in forming a conclusion in any one case, and it may be noted that recently Landis and Lewis (*Amer. Journ. Med. Sci.*, 1915, vol. el. p. 195) called attention to a latent type of pulmonary lues confined to the apices, in every way simulating early tuberculosis.

Diagnosis.—The Wassermann test if positive is helpful, but merely signifies that the patient has lues; if negative, it has no value one way or another. There are really but three points in the diagnosis that seem to be of any help: (1) The absence of tubercle bacilli on repeated examinations. (2) The curious lack of proportion between the gravity of the physical signs, the severity of the symptoms, and the astonishingly good appearance of the patient. (3) Merely bearing in mind in the examination of every suspected pulmonary tuberculosis that there exists such a curable lesion as lues of the lung.

Prognosis.—More than thirty years ago Balzer said that the prognosis for a patient suffering from lues of the lung depended upon the intuition or clairvoyance of his physician. If the condition is recognised the treatment is simple, startling in its results, in some cases almost miraculous. Even patients whose condition would appear to be desperate are restored to normal in a comparatively short time.

The treatment is simply the intensive treatment of syphilis. If the disease is not recognised death will result in the majority of instances from general weakness or lesions of other viscera. Pulmonary syphilis progresses slowly—much more slowly than tuberculosis—though cases like "galloping consumption" have been reported. A few cases undoubtedly regress spontaneously without treatment, as is characteristic of syphilitic lesions elsewhere. Lung syphilis may open the door to pulmonary tuberculosis and thus cause death indirectly.

Association with Tuberculosis.—The congestions, erosions and ulcerations of the mouth, pharynx, larynx, and traehea, so common in secondary syphilis, actually predispose to the development of consumption. Laryngologists warn us of this possibility. Though the laryngitis is syphilitic at the outset, a tuberculous process is some-

times engrafted upon it, and though specific therapy will cure the syphilitic lesions the tuberculous laryngitis remains. Syphilitic bronchitis in a similar manner prepares the way for tuberculosis. When syphilis attacks a patient already ill with consumption the pulmonary tuberculosis is aggravated and pursues a more rapid course. When tuberculosis appears in a syphilitic the development of the tuberculosis would seem to depend upon the interval that had elapsed since the primary lesion, the chancre. In other words, when tuberculosis is added to an active recent syphilis the tuberculosis pursues a more rapid course of the galloping type. But when tuberculosis develops in a patient whose syphilitic lesion occurred over six years before, the tuberculosis pursues a mild, slow course, without pyrexia and tending to the chronic fibrous type—the longer the interval after the chancre the milder the tuberculosis.

Lisser's contribution is illustrated by seven cases and nine lung Roentgenograms. Space does not suffice to review the case reports, but the results of treatment are very striking. Thus, in Case I., the night-sweats disappeared permanently two days after the first salvarsan, his cough was markedly ameliorated and ceased entirely after the second dose. After the fourth dose the patient remained away, feeling too well to return. One year later Lisser located him and found him in robust health, having gained 50 lbs. in weight. He had not had any return of his cough or night-sweats. In Case II., a woman aged 22, one month after commencing treatment the temperature and pulse were normal, dyspnœa, expectoration, night-sweats, and pains in chest, of which she had complained for five or six months, ceased. She gained 15 lbs. in weight, the highest she had ever weighed.

Lisser's conclusions, from a very careful investigation of the literature added to his own experience, are: (1) Syphilis of the lung is uncommon, but not extremely rare. (2) It is worth diagnosing correctly. (3) It does not produce a typical clinical picture easy of diagnosis. (4) It should be kept in mind in every case thought to be pulmonary tuberculosis where the sputum is negative for tubercle bacilli. (5) Proper antisyphilitic treatment produces remarkable cures.

NEW BOOKS.

Poliomyelitis in all its Aspects. By JOHN RUHRÄH, M.D., and IRWIN A. MEYER. Pp. vi. + 297. With 120 Illustrations. Philadelphia and New York: Lea & Febiger. 1917.

ACUTE POLIOMYELITIS has attracted more attention than any other disease of the nervous system during the past decade. Since the great New York epidemic of 1907, outbreaks have been reported every year in various parts of the United States. Much has been added to our knowledge of the disease, and American investigators have taken an active part in elucidating its pathology and perfecting its orthopædic treatment. Although there are many excellent monographs featuring one or more phases of the disease, there is, in the opinion of the authors, no adequate account contained in one volume. They have consequently essayed to meet this want, and that they have satisfactorily attained their object will be admitted by those who read their book. Of special importance are the chapters on the nature of the virus and the epidemiology of the disease, since it is in these directions that so much advance has been made. An historical sketch with which the book opens gives due recognition to the work of Heine, Medin, Wickman, Flexner, and others. The authors give the credit of first mentioning poliomyelitis to Michael Underwood, a London practitioner, who in 1784 published a treatise on the diseases of children, which went through several editions. Extracts from this work, together with some plates reproduced from Heine's monograph published in 1840, are of much interest. A chapter on the examination of muscles and muscle training will prove helpful to the practitioner who is not conversant with the neurological examination, as will one entitled "Some Anatomical and Physiological Reminders."

Locomotor Ataxia (*Tabes Dorsalis*). By WM. J. M. A. MALONEY, M.D.(Edin.). Pp. 299. With 97 Illustrations. New York and London: D. Appleton & Co. 1918. Price 15s. net.

RECENT advances in our knowledge of the reflex, sensory, and vegetative functions demand a reconsideration of the symptomatology and treatment of tabes dorsalis, while the discovery of the spirochæte pallida as the cause of syphilis, and its detection in the exudative foci which precede tabetic changes, open a wide field for pathological and clinical speculation. The application of new facts and hypotheses to a well-established clinical picture calls for much discrimination and judgment, and the way in which the author collates the results of physiological and pathological investigation, and the convincing

manner in which he applies them to the clinical problems which the disease tabes presents, compels admiration. Perhaps the most important section of the book, which the author modestly styles "An Introduction to the Study and Treatment of Nervous Diseases for Students and Practitioners," though it is really a very complete monograph upon tabes, is that which deals with the mental state in this disease. A product of the symptomatology, amounting in many cases to an anxiety neurosis, the mental state of the tabetic may aggravate his symptoms to a remarkable degree. The improvement which results in many cases from an explanation of the mode of production of the symptoms by one who is thoroughly conversant with their significance is often astonishing. The author has done a great service by emphasising an aspect of treatment which has admittedly in the past received but scant attention in relation to this disease, but which, as he has found by personal experience, is attended with great possibilities. Space does not permit of a consideration of the method of treatment which he describes in detail and which he practises with such success.

Tumours of the Nervus Acusticus and the Syndrome of the Cerebello-pontile Angle. By HARVEY CUSHING. Pp. 296. With 262 Illustrations. Philadelphia and London: W. B. Saunders Co. 1917.

AMONG 468 cases of intracranial tumour observed by Harvey Cushing and verified by operation or autopsy, 56 were extracerebellar growths, and 30 of these, or 6 per cent. of all the verified cases, were tumours growing from the auditory nerve. These growths may be designated fibroneuromata. As a rule occurring as single tumours, they are occasionally bilateral, while very rarely they are the expression of a generalised neurofibromatosis. The order of development of symptoms is "first, the auditory and labyrinthine manifestations; second, the occipito-frontal pains with suboccipital discomforts; third, the incoordination and instability of cerebellar origin; fourth, the evidence of involvement of adjacent cerebral nerves; fifth, the indications of an increase of intracranial tension with a choked disc and its consequences; sixth, dysarthria, dysphagia, and, finally, cerebellar crises and respiratory difficulties." Post-mortem appearances give the impression that these tumours should be easily dealt with by the surgeon. This is not, however, the case since, when complete enucleation is attempted, uncontrollable bleeding is very apt to occur from branches of the basilar artery entangling the growth. The author has consequently abandoned the idea of extirpation, and contents himself with enucleating as much as possible of the tumour by an intracapsular procedure. Unfortunately, it is not at present possible to diagnose the tumour when it is only producing auditory manifestations and is of small size and might consequently be removable. The operative

mortality in Cushing's first 10 cases was 40 per cent., in his last 18 cases 11·1 per cent. He expects to reduce the latter figure very materially. The relief following operation is usually "enormous." At the time that the majority of cases came under observation the changes in the optic nerve were already so far advanced that vision could not be saved. A three-year period after a wide decompression and partial enucleation may be regarded as a fair estimate of the expected period of relief. Almost one half of this fine monograph, which will be welcomed not only by neurologists whose attention has been especially directed towards this group of intracranial tumours during the past few years, but also by the aurist and the surgeon, is occupied by detailed records of the thirty cases of acoustic tumour verified by the author at operation.

War Surgery of the Abdomen. By CUTHBERT WALLACE, C.M.G. Pp. 151. With 26 Illustrations. London: J. & A. Churchill. 1918. Price 7s. 6d.

SURGEON-GENERAL WALLACE says that the book contains the experience in abdominal surgery of a sector of the battle-line over a period of thirty months. It is founded on the practice of many surgeons working under different conditions and in different hospitals. The book gives an excellent account of the present attitude towards abdominal wounds. It traces the evolution which has occurred in the treatment of these cases, and the work bears testimony of the greatly improved results which have followed upon early operation. One of the most interesting chapters deals with the causes of failure —hæmorrhage, sepsis, and surgical shock. The book throughout is essentially a practical treatise and we welcome its appearance. This is practically the first monograph which has appeared dealing with British surgery as practised at the front, and we hope that its appearance may be followed by others. Hitherto, while French opinion has been well represented, British publications have been rare. This treatise should prove of the greatest value to men whose duty may lead them to deal with abdominally wounded men.

Diseases of the Heart. By FREDERICK W. PRICE. Pp. xiv. + 472. Illustrated. London: Henry Frowde and Hodder & Stoughton. 1918. Price 21s. net.

DR. PRICE is to be congratulated on the excellency and readability of his book. He has had exceptional opportunities of personal observation, especially in the work he has carried on in the Mount Vernon Hospital for Diseases of the Chest, where he has been associated with Sir James Mackenzie and Professor Cushny, and he has used his opportunities well.

The book gives evidence throughout of careful observation, clear thinking, and concise expression. As in most modern works on the heart, prominence is given to the myocardium, and its affections are carefully discussed; but other parts of the subject are not neglected, and the sections dealing with endocarditis and pericarditis are more adequately handled than they have sometimes been of late.

The book is written rather for the general physician than for the specialist in heart disease, and specialised methods, such as electrocardiography and radiography, are touched upon but lightly, whilst subjects of universal importance, such as treatment, receive due prominence.

An interesting chapter, which contains a considerable amount of original work, is that on "Primary Cardiac Overstrain, or Soldier's Heart," where, with the aid of modern methods, a much clearer conception of the process has been attained than was possible in the older literature of the subject.

In view of the wide experience of the author it is perhaps unfortunate that he sometimes quotes conflicting opinions on unsettled subjects without himself taking either side, merely stating that whilst "some authorities hold" such and such a view, "in the opinion of others" the facts point in an opposite direction. Clearly in such cases one or other group of authorities is wrong, and one would have welcomed an indication of Dr. Price's own opinion. On the other hand, in one or two places the author makes statements that differ from the current opinion without giving any indication that he does differ. These, however, are very minor faults that can easily be rectified in future editions.

Taken as a whole, this book is, from the practitioner's standpoint, one of the best of the many monographs on the heart that have appeared of recent years, and both author and publishers are to be congratulated on the care with which the text and the clear and well-chosen illustrations have been produced.

Human Intestinal Protozoa in the Near East. By Temporary Lieutenant-Colonel C. M. Wenyon, R.A.M.C., and Temporary Captain F. W. O'Connor, R.A.M.C. Pp. 218. Illustrated. London: Published for the Wellcome Bureau of Scientific Research by Bale, Sons & Danielsson. 1918. Price 10s. 6d. net.

This very helpful volume contains a revised issue of the authors' well-known report on the human intestinal protozoa in Egypt, published during 1917 in the *Journal of the Royal Army Medical Corps*, to which has been added an Appendix giving the history of the cases treated. After giving an account of the methods of collecting material and of examining various groups of men for protozoal infections, the authors

describe the characters of the intestinal organisms, especially *Entamœba histolytica*, *E. coli*, and *E. nana*, the last named being a new species which proved to be one of the commonest protozoa in the human intestine in Egypt.

One of the chief practical problems considered is that relating to carriers: "Cases may remain as healthy carriers for long periods without showing any signs of dysentery," but on microscopical examination of their fæces the characteristic quadrinucleate cysts of *Entamœba histolytica* are found. Observations on the part played by house-flies in carrying protozoal infection from fæces to food demonstrate the importance of the measures directed against flies. Examination of the droppings of 229 flies captured in a hospital compound showed that eighteen of the flies had deposited cysts of protozoa or eggs of parasitic worms.

NOTES ON BOOKS.

The Fitting-out and Administration of a Naval Hospital Ship, by Fleet Surgeon Edward Sutton, R.N. (John Wright & Sons, Ltd.). The author of this little book has had a unique experience of hospital ships both before and during the present war, and records in great detail the practical points in regard to equipment and administration which have stood the test of, or been evolved by, war service. Throughout, the book is essentially a practical one, and, whilst it appeals to a somewhat restricted circle of readers, it can be cordially recommended as a standard work on the subject with which it deals.

In his *Aids to Rational Therapeutics* (Baillière, Tindall & Cox, 1918, 3s. 6d. net), Dr. R. W. Leftwich systematises in a concise and practical way the treatment of diseases under a method of grouping them together according to their salient feature. An appendix on what may be called the "bedside manner" side of medicine is added.

The third edition of Cramer's *Directions for a Practical Course in Chemical Physiology* (Longmans, Green & Co., 1917, 3s. net) is, save for a few verbal alterations, identical with the second edition which appeared in 1914. The course outlined is more than ample for the average student.

The ninth edition of Thresh's *Water Analysis* (J. & A. Churchill, price 3s.) is a practical guide for the use of medical officers of health and others—not an exhaustive treatise. The methods described do not involve more than the use of soloids as reagents, and no complicated apparatus is needed.

We have received a copy of a lecture, *Notre Sympathetique Confrère François Rabelais* (Genève, Librairie Georg & Cie., 1918), delivered before the Medical Society of Geneva by Dr. Charles Greene Cumston.

Rabelais' fame as a writer has so greatly overshadowed his work as a physician that it is good for us every now and again to be reminded, as we are by the erudition of Dr. Cumston, that he was a great clinician as well as a great humorist.

In *Food in War Time* (W. B. Saunders Co., 1918), Professor Graham Lusk urges on his countrymen (for it is chiefly written for Americans) to eat less meat and more milk, to eat oleomargarine and save butter, to eat corn bread and export wheat, to eat corn syrup and save sugar, and to eat fresh fish, fruit, and vegetables. It is dedicated to his fellow-countrymen, and the altruistic spirit which pervades it may be summarised in one quotation: "In some parts of the world whole nations are starving . . . in most . . . people are short of food. In America we have more food than in any other land, and we must therefore be careful of our abundance, saving it to the utmost. . . ."

A Handbook of Antiseptics, by H. D. Dakin and E. K. Dunham (Macmillan & Co.), gives a concise account of the chief chemical antiseptics which have been found useful during the present war, and their methods of preparation. It is a useful work of reference.

We dealt at some length with Carrel and Dehelly's *Treatment of Infected Wounds* (Baillière, Tindall & Cox) when it first appeared a few months ago. In the second edition now before us, recent improvements in method have been incorporated and the results of treatment have been brought up to date.

In *The Third Great Plague*, with its sub-title, "A Discussion of Syphilis for Every-day People" (W. B. Saunders Co.), Dr. John H. Stokes gives a full account of the disease in all its aspects, social and medical. It should prove a powerful factor in the propaganda work going on at present in all countries.

Sir B. Moynihan has published, under the title *American Addresses* (W. B. Saunders Co.), a number of papers read in Chicago and elsewhere in the autumn of 1917, in the hope that they may help his American colleagues to appreciate the causes and conditions of the war, and to aid them in their treatment of the many new phases of surgical diseases with which they will be called upon to deal.

In *A Practical Handbook of Surgical After-Treatment*, Mr. Alan H. Todd (Edward Arnold, price 4s. 6d. net) describes briefly, but adequately, the methods to be employed in the after-treatment of operation cases. The measures recommended are thoroughly sound and practical, and such as every house-surgeon and senior student should be familiar with. The chapters dealing with the treatment of wounds and with the preparation and care of rectal cases have been largely rewritten in the present (second) edition.

We have received the first number of the new quarterly *Reveille* (Stationery Office, price 2s. 6d.), edited by Mr. John Galsworthy, and devoted like its predecessor, *Recalled to Life*, to the after-care of the

crippled soldier, more especially perhaps in the direction of arousing and educating popular opinion. The keynote of the new magazine is that the State should not support, but make self-supporting, the victims of the war. It is to nobody's interest, least of all that of the men themselves, that the vocation of "Mons Hero" should be followed and subsidised by the State. What we look for after the war is that the injured shall be enabled to forget what they have lost by having learned a suitable craft or trade in which their disability will be compensated for; only in this way can they fully resume their proper place among their fellows. *Reveille* opens well, with contributions by Mr. Rudyard Kipling, Mr. J. M. Barrie, Mr. Max Beerbohm, and others.

The most recent addition to the series of monographs issued by the Nervous and Mental Disease Publishing Company is on *The Technique of Psycho-Analysis* by Dr. Smith Ely Jelliffe (price $2 net). It is written for the beginner, and explains as clearly as is possible the technical methods of psycho-analysis, and the dangers to be guarded against. It appears to us to be quite worth the study of practitioners, even although they have no intention of taking up psycho-analysis, for it is a matter on which a well-informed doctor ought to have some knowledge. It may therefore be widely recommended, while those who think of specialising in psychotherapy will find its teaching valuable.

The Modern Treatment of Mental and Nervous Disorders (Longmans, Green & Co., London, price 1s. net) is the reprint of a lecture delivered by Dr. Bernard Hart at the University of Manchester. It is a plea for the study of the etiology of these diseases on their psychological aspect. It is designed to stimulate the interest of the profession in this direction. So far as it goes it will probably do so, but it is of too slight a character to have much influence.

The fourth edition of Dr. Lewis' *Clinical Disorders of the Heart-Beat* (Shaw & Sons, 6s. net) translates the facts which modern cardiology has discovered by means of the polygraph and electro-cardiograph into terms of ordinary bedside methods, and thereby brings them within the sphere of the general practitioner. The work is admirably done, and the fact that a fourth edition of this comparatively recent work has already been called for shows how much the book has been appreciated by those for whom it was intended.

Optimists as to organotherapy, and those who are apt, under the stimulus of clinical enthusiasm, to detect disturbances of the endocrine glands in any unexplained disease, might do worse than read Professor Gley's *The Internal Secretions* which has been very adequately translated from the French by Dr. Maurice Fischberg (Heinemann, price 10s. net). Professor Gley is a physiologist, and it is not a bad thing to have him remind us how few facts are really proved about the ductless glands, how much is merely probability, how much con-

jecture, and how much unexplored. The book is short, it is logical, and it is clear, as might be expected from a countryman of Claude Bernard and Brown-Séquard, the initiator and resurrector respectively of the doctrine of internal secretions.

In *Elements of Hygiene and Public Health* Dr. Rai Bahadur Jaising P. Modi (Butterworth & Co., price 4 Rs. net) has compiled a useful work on hygiene and public health applicable to the conditions existing in India and in the East generally. In the main it follows the conventional lines, but those chapters which deal with malaria, plague, the house-fly and the diseases conveyed by it—cholera, enteric fever, kala-azar, etc.—are exceedingly well written and furnish an excellent guide to the proper method of treating those diseases in warm climates. What we have not seen hitherto in works of this description are chapters dealing with village sanitation and famine camps, fairs, and poorhouses.

Field Hygiene and Sanitation, by Joseph H. Ford (William Heinemann, Ltd., price 6s. net), is an admirable little book which gives a complete account of military camp hygiene and sanitation. It is well illustrated, and much that is considered best in enemy armies is described and recommended. The chapter on personal hygiene is clear and practical, and the book as a whole should prove of value to medical officers and commanding officers who lack previous experience of military sanitation. The index is well drawn up and very complete.

Massage and Medical Gymnastics, by Dr. Emil A. G. Kleen (J. & A. Churchill, price 21s. net), is an excellent translation from the Swedish of Dr. Kleen's book on *Massage and Medical Gymnastics*, by Dr. Mina L. Dobbie, which should now become the standard book of reference on the subject, not only for medical gymnasts but for the medical profession as well. The special chapters on "Ling's Medical Gymnastics," "Zander's Medical Gymnastics," and "The Use of Medical Gymnastics and Massage in Orthopædics," have added considerably to the value of the book. The book is well arranged, has a good index, and the photographs and diagrams illustrating it are clear and helpful. It will prove invaluable to those engaged in military work.

We are asked to draw the attention of readers to the Final Report of the Health of Munition Workers' Committee, entitled *Industrial Health and Efficiency* (London: Stationery Office, 1918, 2s. net), and this we do on the full assurance that it ought to be perused by every doctor, on account of the great general interest of its contents. The problems of efficiency in industry will be before us after the war in as full a measure as they have been during the years that have just gone by; they are problems the solution of which is essential to the health of the workers and the prosperity of the State, so that this Report touches our national life at many points. For these reasons we hope that this Blue-book will be widely read.

We have received from the publishers Nos. 5 and 6 of a series of Medical War Manuals authorised by the Secretary of War of the United States, and uniform therewith *Medical Service at the Front*, by Lieutenant-Colonel M'Combe, C.A.M.C., and Captain A. F. Menzies, M.C., C.A.M.C. (Lea & Febiger, 1918, price $1.25 net). The last is a short sketch of the methods of dealing with the sick and wounded as they have been evolved by the C. A. M. C. in France, and it has been written with the idea of satisfying the national curiosity of those whose fortune it has been to stay at home as to how things are done abroad. We have nothing but praise for this little book which will, we feel sure, be welcomed by many. No. 5 of the American War Manuals (same publishers, price $1.50) has the title *Lessons from the Enemy*, and is a sketch from personal knowledge by Dr. John R. Dill, Major, Medical Reserve Corps, U. S. Army, who was director of an American Hospital Unit in Germany during the earlier period of the war, of how Germany cares for her war disabled. It is interesting to note how similar are her methods to ours, and on the principle *Fas est ab hoste doceri* the book ought to find many readers. No. 6 of these manuals is on *Laboratory Methods of the United States Army*, compiled by a staff in the office of the surgeon-general. It strikes us as being a most excellent handbook of laboratory methods and clinical pathology, and suggests the rather saddening reflection that the United States Medical Service is entering the war with an equipment more than equal to what we have reached only after four years' experience. At least it is difficult to imagine that a medical service which proposes to utilise a manual so comprehensive as this would regard (as our authorities did) one microscope as enough for a general hospital in the tropics, and the rest of the outfit in proportion. It is not, of course, suggested that all the methods in this book could be available in an ordinary general hospital or mobile laboratory, but the outline of the methods given is—well, more spacious than the R. A. M. C. is accustomed to. Though, as an American graduate once remarked to the writer, apropos of our hospital equipment, "You get there just the same."

Transactions, Reports, etc.—*The Transactions of the Thirty-Ninth Annual Meeting of the American Laryngological Association* (M'Connell Press) volume is hardly up to the standard of its recent predecessors in regard to the interest of the original papers, but this is fully made up for by the report of the Committee appointed by the Otological and Laryngological Associations of America dealing with National Defence, and also by that of the Committee on the Teaching of Otolaryngology. The former recommends that all members of otological and laryngological associations become members of the Medical Reserve Corps; that such members examine recruits for the aviation service in regard to the condition of the labyrinth; that they

examine the upper air tracts of all recruits where such examination seems necessary; that the ears of all recruits in whom there is any suspicion of impairment of hearing or of suppurative otitis media be investigated, as the experience of the British Army has pointed to the importance of excluding cases of chronic middle-ear suppuration. The committee suggests that otolaryngologists can be of service in treating diseases and injuries of the ear, nose, and throat at the various grades of military hospitals. Men under thirty-five should be utilised for active service, while the older men are placed at the base hospitals. The Committee further suggests the establishment of one or more base hospitals devoted to injuries of the head, upper air-passages, eye, and ear. Each general hospital unit should have a "head" hospital with a *ratio* of 20 per cent. of beds. The *personnel* of this section should include one otolaryngological surgeon and four assistants. Six nose, throat, and ear surgeons should be assigned to each division of the mobile army.

BOOKS RECEIVED.

ALISMA. Reminiscences of a Student's Life . . . . . (*Oliver & Boyd*) 4s.
BARCLAY, R. MARY. Midwifery. In Two Parts. Second Edition (*E. & S. Livingston*) each 1s. 6d.
CALENDAR of the University of Toronto. Faculty of Medicine, 1918-19. (*University of Toronto Press*) —
CHRISTIE, A. C. Manual of X-Ray Technic. Second Edition . (*J. B. Lippincott Co.*) 12s. 6d.
CUSHNY, A. R. Pharmacology and Therapeutics. Seventh Edition (*J. & A. Churchill*) 18s.
DAVIS, GWILYM G. Applied Anatomy. Fifth Edition . . . (*J. B. Lippincott Co.*) 30s.
EPISCOPAL Hospital Reports, Philadelphia. Vol. IV. . . . . (*Wm. J. Dornan*) —
FAIRBAIRN, JOHN S. Text-Book for Midwives. Second Edition. (*Henry Frowde, Hodder & Stoughton*) 20s.
FORD, JOSEPH H. Military Medical Administration. Second Edition. (*P. Blakiston's Sons & Co.*) —
FORSTER, EMILY L. B. How to become a Woman Doctor . (*Charles Griffin & Co., Ltd.*) 3s.
GRAVES, WM. P. Gynecology. Second Edition . . . . (*W. B. Saunders Co.*) dols. 7.75
HUGHES, BASIL, and H. STANLEY BANKS. War Surgery . . (*Baillière, Tindall & Cox*) 30s.
HULL, A. J. Surgery in War. Second Edition . . . . (*J. & A. Churchill*) 25s.
JONES, ISAAC H. Equilibrium and Vertigo . . . . . (*J. B. Lippincott Co.*) 21s.
KEEFER, FRANK R. Military Hygiene and Sanitation. Second Edition. (*W. B. Saunders Co.*) dol. 1.75
KOLL, IRVIN S. Diseases of the Male Urethra . . . . . (*W. B. Saunders Co.*) 14s.
MACCURDY, JOHN T. War Neurosis . . . . . (*Cambridge University Press*) 7s. 6d.
MAY, PERCY. Chemistry of Synthetic Drugs. Second Edition (*Longmans, Green & Co.*) 10s. 6d.
MAYER, LEO. The Orthopedic Treatment of Gunshot Wounds . (*W. B. Saunders Co.*) dols. 2.50
NEW Jersey State Department of Health. Forty-first Annual Report, 1917 . . . . —
RODDY, JOHN A. Medical Bacteriology . . . . . (*P. Blakiston's Sons & Co.*) —
SAVILL, THOMAS DIXON. A System of Clinical Medicine. Fifth Edition . . . . 28s.
SHERA, A. GEOFFREY. Vaccines and Sera: Their Clinical Value in Military and Civilian Practice. . . . . (*Henry Frowde, Hodder & Stoughton*) 7s. 6d.
SHORT, A. RENDLE (edited by). An Index of Prognosis. Second Edition. (*J. Wright & Sons, Ltd.*) 30s.
STASSEN, M. Pensions et Allocations aux Mutilés et Invalides de la Guerre Rapport. (*Imp. de l'Institut Militaire Belge*) —
STEWART, G. N. Manual of Physiology. Eighth Edition. . . (*Baillière, Tindall & Cox*) 21s.
TARNOWSKY, GEORGE DE. Military Surgery of the Zone of the Advance (*Lea & Febiger*) dol. 1.50
TODD, JAMES CAMPBELL. Clinical Diagnosis. Fourth Edition . (*W. B. Saunders Co.*) 14s.
TRANSACTIONS of the American Gynecological Society. Vol. XLII. 1917 (*Wm. J. Dornan*) —
TRANSACTIONS of the American Surgical Association. Vol. XXXV. 1917 (*Wm. J. Dornan*) —
WAREASSE, J. P. Surgical Treatment. Vol. I. . (*W. B. Saunders Co.*) per set of three, dols. 30

EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES.

CASUALTIES.

DIED on service on 25th October, Lieutenant-Colonel LOUIS P. DEMETRIADI, R.A.M.C.

Lieutenant-Colonel Demetriadi became a Fellow of the Royal College of Surgeons of Edinburgh in 1899.

LOST at sea on 5th October, Lieutenant-Colonel EDWARD FRANCIS HORATIO DOBSON, Bengal Medical Service.

Lieutenant-Colonel Dobson graduated M.B., C.M. at Edinburgh University in 1878.

LOST at sea on 10th October, Major CHARLES WILLIAM DUGGAN, R.A.M.C.

Major Duggan graduated M.B., C.M. at Edinburgh University in 1887.

DIED on service, Major JOHN HART M'NICOL, M.C., R.A.M.C.

Major Hart M'Nicol graduated, M.B., Ch.B. at Glasgow University in 1909.

KILLED in action on 7th October, Major JOHN MORRIS, M.C., R.A.M.C.

Major Morris graduated M.B., Ch.B. at Edinburgh University in 1904, and became a Fellow of the Royal College of Surgeons of Edinburgh in 1909.

DIED on service on 6th November, Major DONALD BURROWS, R.A.M.C.

Major Burrows took the Scottish Triple Qualification in 1902.

KILLED in action on 4th October, Captain JAMES MURRAY M'LAGGAN, M.C., R.A.M.C.

Captain M'Laggan graduated M.B., Ch.B. at Aberdeen University in 1913.

Killed in action, Captain Cedric Lewis Dold, R.A.M.C.

Captain Dold graduated M.B., Ch.B. at Edinburgh University in 1914, and immediately thereafter took a temporary commission in the R.A.M.C.

Killed in action on 7th October, Captain John James Tough, R.A.M.C.

Captain Tough graduated M.B., Ch.B. at Edinburgh University in 1910.

Died on service on 23rd October, Captain James Harris Connolly, R.A.M.C.

Captain Connolly graduated M.B., Ch.B. at Edinburgh University in 1902 and M.D. in 1906.

Died on service on 23rd October, Captain William Laiton Millar, R.A.M.C.

Captain Millar was a graduate of Aberdeen University, M.A. (1903), M.B., Ch.B. (1906).

Died on service on 11th November, Captain Lawson Tait M'Lintock, R.A.M.C.

Captain M'Lintock graduated M.B., Ch.B. at Edinburgh University in 1901.

Died on service on 8th November, Captain Angus Burns Robertson, R.A.M.C.

Captain Robertson graduated M.B., Ch.B. at Edinburgh University in 1911.

Died of wounds, Lieutenant David William Sinclair, R.A.M.C.

Lieutenant Sinclair had just graduated M.B., Ch.B. at Edinburgh University in 1918.

Lost at sea on 9th November, Surgeon-Lieutenant Dundas Simpson MacKnight, R.N.

Surgeon-Lieutenant MacKnight graduated M.B., Ch.B. at Edinburgh University in 1900.

Killed in action on 7th November, Captain Robert Clark, R.A.M.C.

Captain Clark graduated M.B., Ch.B. at Glasgow University in 1914.

Died on service on 29th October, Captain Clarendon Hyde Cresswell.

Captain Cresswell, before rejoining the Army, acted as Sub-Librarian to the Royal College of Surgeons of Edinburgh. He was a Fellow of the Society of Antiquaries, and contributed to this *Journal* a valuable series of papers dealing with the early history of the Royal College of Surgeons.

PROGRESS IN MATERIA MEDICA.

Inaugural Lecture to the Class of Materia Medica.

By Professor A. R. CUSHNY, University of Edinburgh.

The subject of materia medica may claim to be the most ancient of medical studies. In the mists of antiquity and in the simplest of peoples is found the priest physician primarily interested in the application of drugs. Long before any distinction between diseases was possible, treatment by drugs was instituted and often developed to a high degree of complexity. It is a curious subject for the anthropologist to speculate on how this belief in the power of remedies in disease originated, and what were the grounds on which one disagreeable substance was chosen in preference to another. Faith in drugs, especially in vegetable drugs, is certainly one of the most deep-seated and widespread of all creeds; it is even an instinct, for it is found in the lower animals. This profound faith of the primitive peoples in drugs is the more remarkable because most of their remedies are entirely devoid of healing power. Their characteristic features are their disagreeable taste, odour, or other properties, and these suggest that the taking of medicine originated in the idea of sacrifice to some offended deity —that therapeutics was at first a penance pure and simple.

Throughout the ages the use of drugs persisted in undiminished strength, while slowly a body of knowledge as to the nature of disease accumulated and it became possible to distinguish at any rate some of its many varieties. But up to 200 years ago it was possible for one individual to teach all branches of medicine, and the first university chairs in medicine embraced the whole subject.

It was soon found that this arrangement did not make for progress, and new subjects began to bud off from the parent stem of medicine; in each case the teacher continued to conduct clinical classes, but also gave special instruction in his own branch of study. It is interesting to trace the various affiliations formed by materia medica, for in that way a general view of its position in the medical curriculum may be obtained. Not uncommonly it was taught with botany or with the so-called chemistry of that day, which was largely concerned with what we now know as pharmacy; thus in Edinburgh in the eighteenth century Plummer was professor of medicine and chemistry, while, later, Alston and Hope delivered lectures on botany and materia medica. This alliance

between botany and materia medica persisted to recent years, for drugs were arranged according to their natural orders in Brunton's text-book in 1887, and at the same date the examiners in botany were also responsible for materia medica in many universities.

In 1768 an independent Chair of Materia Medica was founded in Edinburgh and was filled in succession by Francis Home (1768-1798), James Home (1798-1821), and Andrew Duncan (1821-1832). Up to the later years of the eighteenth century the teaching of materia medica was purely descriptive, consisting in a detailed account of the external appearance, the origin, and the physical or botanical characters of innumerable substances, many of them handed down on the authority of ancient physicians and used in medicine on the faith of tradition only. And favourable results after the administration of a remedy were credited to it without any uncomfortable doubts, though the course of the untreated disease was often unknown owing to the universal use of treatment.

The character of the treatment depended on the prevailing theory of the day, which attributed all disease to a disturbance of the normal equilibrium of some vital factor, such as the humours. The treatment was devised to redress this equilibrium; thus, if the disturbance was believed to be an excess of fluid in the tissues, a dry remedy was prescribed; if the vital heat was too great, a cold remedy was advised, and so on. Survivals of this are still to be met with; for example, one class of salts was known until recently as refrigerant diuretics, merely because their solution in water reduced its temperature; they were accordingly used in fever under the impression that they would similarly lower the body temperature.

Advance in materia medica consisted in the introduction of new drugs or of new combinations of old drugs. The share that Edinburgh took in this advance is shown by the names still current amongst us, such as Plummer's pills and Gregory's powder, both deriving from professors of the university; that their teaching fell on no barren soil is testified by Fowler's solution introduced by a graduate of Edinburgh. And among new drugs introduced in the later eighteenth century, that of first importance is digitalis, which we owe to Withering, a graduate of Edinburgh and pupil of the great Cullen.

In the beginning of the last century the great advances in chemistry led to a more accurate analysis of the crude remedies hitherto employed, and we find Duncan participating in this movement by isolating some of the alkaloids of the cinchona bark.

But the teaching in materia medica continued to be mainly a wearisome description of the outward and visible characters of the medicines employed in disease without any consideration of how they induce effects in the human body. The dismalness of the subject haunted the greatest of Edinburgh's alumni for years. Charles Darwin writes, "I shall ever hate the name of materia medica since hearing Duncan's lectures at 8 o'clock on a winter morning—a whole, cold, breakfastless hour—on the properties of rhubarb."

Now, however, more attention began to be paid to the effects of drugs as observed in man. And the deductive method by which the action was inferred from the physical characters and in which the treatment depended on the general theory of disease prevailing at the time, began to give way to more objective study. The effect of drugs was studied in patients under treatment, and more especially in cases of poisoning. Materia medica began to lean on toxicology, and not unfrequently, as in the case of Sir Robert Christison, a close connection was established between the Chairs of Materia Medica and Forensic Medicine. The observations of the toxic effects on man were supplemented by experiments on animals, to which poisonous doses of the drugs were given. One danger attended this investigation of the action of drugs through their effects in poisonous doses—the assumption was tacitly made that the effects of small doses were similar in kind though different in degree from those seen in cases of poisoning, and too often these effects were used to interpret the action of the drug in therapeutics. This is a danger which still besets the investigator; it is so much easier to observe and examine the symptoms under large doses and in acute poisoning than the changes in the slower and less marked use of drugs in therapeutics that one is tempted to neglect the second and less obvious action, and to prognosticate the therapeutic effect from a consideration of the symptoms in poisoning. It is ever again being illustrated, however, that this way of reasoning gives fallacious results, and that only by rigid investigation of the effects of small doses can real progress be attained.

Soon a further step was taken and analytical pharmacology began to be the chief subject of investigation. It was no longer sufficient to describe the symptoms induced by a drug, but some attempt must be made to determine through what mechanism the normal processes are altered by drugs. This analysis may be made to some extent in man, but the more subtle effects cannot be analysed except by experiment on the lower animals, in which

the exact changes can be observed and recorded with precision. The results obtained in these experiments must afterwards be controlled by observations on man as far as is possible. Some question has arisen how far the results obtained in animals may be extended to man, and undoubtedly too great reliance has sometimes been put on them. But careful consideration and experience have shown that in most instances the results obtained in properly executed animal experiments throw light upon the therapeutic effects in man.

Some of the earliest analyses of drug action were the classical researches of Magendie on strychnine, and of Claude Bernard on curare and other drugs. Christison recognised the importance of this new orientation in the study of medicines, but was unable to participate in it from external circumstances. Edinburgh was alive to the change, however, and papers appeared from Hughes Bennett, Spence, and others who were interested in this line of investigation. It was reserved for Sir Thomas Fraser to maintain the position of Edinburgh in the van of progress by his famous work on physostigmine, strophanthus, and other remedies. During Christison's long tenure of the chair, two of the greatest advances in the history of medicine occurred, both of them concerned with the use of drugs and both of them originating in or largely developed in Edinburgh. I refer, of course, to the introduction of anæsthesia and of the antiseptic method in surgery. The greatest contribution hitherto made by the New World to medicine was the introduction of ether as an anæsthetic, and this was followed within the year by Simpson's use of chloroform. Lister's method was largely developed in Edinburgh, which shares the credit of the two greatest boons which have ever been given to suffering humanity. The Chair of Materia Medica does not seem to have been concerned immediately with these great discoveries, but the distinction of its teaching is testified by the eminence of its students. Among these I must mention my late friend Sir Lauder Brunton, discoverer of the nitrite action, who first in his great text-book endeavoured to reconcile physiology and pharmacology, patient investigator and inspiring teacher, and later the eminent and much-loved physician. From Christison's time also date my teachers Hay, the first to point the way to the new doctrine of salt action, which he worked on here under Sir Thomas Fraser, and Cash, whose work on many problems of pharmacology is familiar to all workers on the subject. From this department under Fraser two notable teachers have gone out—Stockman, whose work

on the salicylates, iron, and arsenic has established their position in medicine, and Gunn, a younger worker, who has been selected to sow the seed of pharmacological learning in the ancient University of Oxford.

In the course of its development the subject of materia medica has thus changed its alliances repeatedly. Beginning with close relations with botany, it later depended largely on chemistry and toxicology, and it has now found a new partner in physiology. For it is essential that before determining the changes induced by a substance in the living tissues the behaviour of these tissues should be known under normal conditions, and this requires an accurate knowledge of physiology. Pharmacological research is indeed the study of an abnormal condition in the same sense as pathology, and both may be regarded as bearing the same relation to the study of the normal behaviour, which is the subject of the physiologist. And the indebtedness of pharmacology to physiology is not only that the latter supplies the necessary foundation on which the former is built, for in many instances physiologists by profession have made most important contributions to pharmacological knowledge; as an example I need hardly remind you of Sir Edward Schäfer's work on the internal secretions, which has given us adrenalin and pituitary extract—both drugs of great value. At the same time the benefit has not been altogether one-sided, for much knowledge of the normal life of the organs has been gathered from observation of their behaviour when rendered abnormal by drugs or poisons. Indeed, drugs may now be used to a certain extent as reagents to determine the presence and distribution of certain elements which respond to them in the living tissue, and in this way pharmacology is supplying a qualitative chemistry of the living tissues which can scarcely be given by other means at present.

Thirty years ago there appeared to be little connection between pathological work and pharmacology, but since that time the two subjects have been converging, and the pathologist to-day finds that many diseases and symptoms arise from the development of chemical substances in the organism, so that his problems become the same as those of the pharmacologist and have to be attacked in the same way. I need only cite as an instance the great importance now assigned to acidosis, or the production of acid in excess in the tissues.

The three subjects, physiology, pathology, and pharmacology, thus closely interrelated, form a tripod or pedestal on which are

supported the clinical studies, and the question of the connection between the clinic and materia medica has given rise to much debate, and, indeed, to no little heartburning. My predecessors in this chair have all been clinicians, and to many it has appeared the natural course that the teaching on the action of drugs should be associated with the observation of their effects at the bedside. It has been decided, however, and I think wisely, to dissolve this union of theoretical and clinical teaching, which has held ever since the foundation of the medical school. The methods of clinical medicine and of pharmacology have been so elaborated in these later years that the teacher must devote his whole time to one subject if he is to do full justice to it. No one man in these days can follow the progress of clinical practice and of laboratory research with satisfaction to himself or with profit to his students. It is the old problem of the servant with two masters; he must be an amateur in one direction and a professional student in the other. It is often tacitly assumed that the Chair of Materia Medica must be incomplete unless its occupant has beds in the medical wards. But it may be argued equally well that he cannot teach on anæsthetics or antiseptics unless he is a surgeon, and that the discussion of mercury and salvarsan involves his attendance on the lock wards. A similar problem arose in this University about a century ago, when it was proposed to found separate chairs of anatomy and surgery in place of the one united chair which had previously served for both. In that case the divorce was carried through by the law courts or the high-handed action of the Government. Now happier counsels have prevailed and the union has been dissolved by mutual consent. No one would now dream of advocating a common chair of anatomy and surgery, and I hope that the separation of pharmacology and the clinic may prove equally advantageous. There is no intention to block up altogether the windows of materia medica, which have so long opened on the clinic. It is rather intended to improve the lighting by condensing it through the Christison professor of therapeutics. The connection will be the closest possible. I hope to benefit by accurate clinical observations, while I shall reciprocate by helping my colleague when he wishes to have experimental observations. It may be that our future collaboration may help to solve one of the difficult problems in the organisation of medical study—how to maintain the connection between the theoretical and practical branches.

The ultimate object of pharmacological research being the healing of the sick, it may be asked how the experimental study of the effects of drugs on healthy men and animals can be of value. Would it not be more profitable to follow the direct course and study the action on the sick? It is forgotten that in treating illness our aim is often, not to act on the diseased tissues but to compensate for their insufficiency by exciting to activity other organs; for example, in disease of the kidneys we may excite the normal skin glands to take over part of the function performed by the kidney in health. When disease can be communicated to animals, the study of the action of drugs on these has proved a valuable method, and it is to be anticipated that this method of experimental therapeutics will give even greater results in the future, as the causes of diseases come more under our control. A frequent complaint is made that the pharmacologist does not pursue this course more frequently, that he might progress more rapidly if research were definitely aimed at some particular clinical object, if the investigator saw some crying need in treatment and worked to supply it. Here pharmacological research suffers from the same reproach as has been made to all scientific investigation by so-called practical men. Ever and again the complaint has been that the investigator follows some line of inquiry into the clouds, forgetting that mankind is waiting for practical results, and that everyday problems are suffering from neglect. The complaint may have had some justification in the past, but any possible opportunity of attacking the immediate problems of therapeutics is eagerly seized at the present time. It is at first rather disconcerting to find that the indirect method is the more fruitful, that the observations arising in the course of investigations which had no direct clinical objects have often been of more value than those more definitely designed to improve therapeutics. But this is true of scientific investigation in general; Faraday can scarcely have aimed at the manifold uses of electricity of to-day when he began his investigations, and Röntgen was not concerned with the progress of medicine when he discovered the X-rays. In our own subject, and in this University, Brunton was not looking for a remedy when he watched Gamgee's experiments on the nitrites. Fraser can scarcely have been searching for a heart tonic when he met strophanthus in an arrow poison, nor can Schäfer have consciously set out to find a haemostatic when he discovered the remarkable properties of the active principle of

the suprarenal glands. Of a truth, in pharmacology, as in other departments of science, many, like Saul, have gone forth to seek for asses and have found a kingdom.

The benefits which have accrued to medical practice from laboratory research have been twofold. In the first place, it has led to the disappearance of many ancient remedies hitherto in use. I am far from advocating the abandonment of a drug because its usefulness cannot be demonstrated in the laboratory. We know far too little of the diseased conditions, and of the action of remedies, to justify this attitude. But when a substance is found of little value experimentally, one cannot but examine more critically the grounds for its clinical use. If its position in the clinic is found unassailable, the conclusion is that the laboratory methods are insufficient. But in many instances the experimental results have suggested renewed clinical examination, which has failed to confirm the reputation of remedies. Many of those ancient drugs have thus rightly been relegated to the lumber-room of medical history. On the other hand, renewed examination has established the value of many remedies and the experimental method has afforded an explanation of their operation. Their use has thus become rational instead of depending only upon clinical experience, and at the same time they can be applied with greater precision. No treatment can be considered as satisfactory as long as it is unintelligible, however it may be buttressed by statistics. Pharmacological research has thus improved therapeutics by sifting the grain from the chaff.

And while it has reduced the number of useless drugs formerly prescribed, it has added many new and valuable remedies. It is a fact that is always forgotten by the medical profession that in the last half century no drug of the first importance has entered by any other portal than that of the experimental laboratory. Without it we should have to depend on opium and morphine for soporifics; chloral and its allies would be unknown. Cocaine and the local anæsthetics and analgesics would not be available. The best hæmostatics, diuretics, and antipyretics were discovered experimentally, and, to crown all, the antitoxins and salvarsan. If it were possible to estimate the value of the life saved and the suffering relieved by even two or three of the remedies introduced by the laboratory route, and put it against the expense of all the laboratory investigations throughout the world, the dividend would be found so enormous

that the cry would be, not for economy but for lavish investment in such a paying investment.

I have spoken so far of the objects and results of pharmacological research. You may remind me that this is a great teaching institution, and that research is rather for the advanced worker than for the ordinary student. But adequate teaching in an advancing subject demands research on the part of the teacher, for every day new points of view and new ideas are brought forward in a progressive science. How is the teacher to separate the true from the false unless he is able to control the methods used in discovery and the results obtained? If he is to keep his teaching up to date, he cannot wait for others to review the question at issue, nor, indeed, can he measure the cogency of the arguments on one side or the other. Yet if the question is one of moment, he must give an opinion; it is useless to give the two opposing points of view and leave the student to decide between them, for if the experienced teacher is unable to determine the truth, how can the beginner be expected to do so? Research is therefore essential to the best teaching, and adequate leisure must be allowed for it in any scheme of medical education.

The atmosphere of research must also be the environment of the student. I do not mean that the undergraduate need learn the actual machinery by which accurate experimental results are obtained, but the mental attitude of research must be cultivated, for though the student may never again have the opportunity of controlling the action of a drug with the nicety possible in the laboratory, he is to spend his life in observations of the same order. He is to exchange the frog and the rabbit of the laboratory for the patient in the clinic, but the method of action and observation is the same, and his success in treatment depends largely on how far his powers of observation and his accuracy have been cultivated and how far the principles of research have been inculcated in his apprenticeship to medicine. And with the equipment given him in his youth he has continually to solve problems of such complexity as are to be met with in almost no other sphere of practical life. For in therapeutics the question must always arise—how far are the results achieved due to the treatment, and how far are they accidental to the malady or due to some feature of the treatment which is overlooked? In a concrete instance in which improvement follows the use of a drug, is the latter the efficient cause, or is the recovery due to a natural remission of the disease or

to some such side factor as rest? And this question must be answered by the physician if he is to maintain his position as a scientific observer, and not sink to that of a mere prescriber of drugs of whose efficacy he has no adequate evidence. The decision is the more difficult because it is often impossible to control the results with those obtained without treatment. As long as there is any reason to believe in the efficacy of a drug, the medical man feels that he must give his patient the benefit of the doubt, rather than pursue the so-called expectant treatment—that is, carry out a control experiment. The answer to my query varies with the training and experience of the medical man. If his outlook is still dominated by the old views of pathology, if his chief interest lies in the post-mortem room, he will regard his treatment as a mere means to placate the patient; if he is an enthusiast in treatment, he will not hesitate to ascribe the results to his drugs, although he may have difficulty in determining which of them has proved valuable. And, curiously enough, while these two schools of thought are at opposite poles in regard to the efficacy of drugs, they both combine in ascribing the most extraordinary virtues to any treatment which does not involve the use of medicines, whether this consists in applying ointment to the skin in order to prevent nerve-leaks, or even in carrying a magical rod which resembles the talisman and charm of mediæval medicine.* The true course is the middle one. The educated physician must recognise that medicines are of value in many conditions, but, at the same time, that their virtues are limited. Not every recovery that follows a course of medicine is due to the treatment, but in many such recoveries the medicine is at least a contributing factor. His problem is to determine in what cases and under what conditions the beneficial results are attainable, and to use his medicines only under these conditions. I have said that the problem is a most difficult one, and that the best training for it is the careful examination of what drugs are capable of accomplishing. And this can best be initiated in the experimental laboratory, while it must be supplemented in the clinic.

So much for the mental attitude to be cultivated. What is actually to be taught? Materia medica in its progress through the ages has gathered to itself a mass of accretions of all kinds. From each stratum of medical theory through which it has passed it has collected something, until now the valuable con-

* Both of these procedures have been advised in recent contributions to medical practice emanating from the B. E. F., France.

stituents have become covered with so much dross that to the casual observer it may sometimes seem as if all were worthless. Huxley was in favour of abandoning the teaching altogether, and there is no question that this accumulation of matter of little worth has been detrimental to therapeutics through the discouragement which has attended the early study of the subject. The student has got up by rote whole lists of supposed remedies, and when his time of trial is over he relegates the whole—good and bad—to oblivion. In medicine we have followed the apostolic charge to "prove all things and hold fast to that which is good," but we have given an unduly liberal meaning to "good," interpreting it as "not positively harmful," and retaining many harmless though useless preparations. At the present day we are using remedies whose only interest is their disagreeableness—a doctrine handed on to us from the primitive medicine-man of the savage. Within recent years a remedy was in use for epilepsy, derived without investigation from the mediæval astrological medicine, and even now drugs are included in the Pharmacopœia on the ancient theory of signatures, which advocated yellow remedies for yellow diseases, such as jaundice, and red-coloured drugs for poverty of the blood. The dead hand of the eighteenth century still holds us in thrall through its numberless forms of preparation, the great majority of which could be dispensed with without loss. The medical student staggering under this load reminds one of the knight of Lewis Carroll, with his armament of bed-warmers, mousetraps, and other preparations for unlikely contingencies—a piteous figure. Fortunately the student is relieved from his burdens by examinations, which may be compared to his prototype's abrupt descents from his steed. It is far from my mind to dispraise the ancient physicians, the fathers of medicine to whom we owe so much. But, on the other hand, too great veneration for our ancestors hardly makes for progress, and may be a burden to our young men. The division of medical teaching into a dozen or more departments had not for its object that the student should be taught twelve times as much, but that he should be taught more accurately. We must scrap our obsolete weapons, and send him out adequately armed with the best, and not burdened with the superfluous. The teaching in materia medica will be limited to drugs of real importance in therapeutics or in the principles they illustrate. The minimum of preparations will be insisted on; the chief object will be, not to sketch the whole world of possible remedies, but to grave deeply those of proved merit.

THE "NO SPLINT" TREATMENT OF FRACTURES ABOUT THE SHOULDER, IN THE HUMERUS, AND THE ELBOW.

By J. W. DOWDEN, Surgeon, Royal Infirmary, Edinburgh.

If it is possible to treat a patient with a simple fracture of the humerus in such a manner that he returns to work in six to eight weeks as a joiner, a dentist, or a mill worker, it is surely an advance in the treatment of the injury, and this result I can claim. Now, when man power is needed and urgent, it is of especial advantage. The present war has compelled surgeons to modify views usually taught them and implicitly believed in, but in spite of everything, splints are apparently a *sine qua non*, and the man who does not invent a new splint is remarkable.

There are thousands of men at the present time with useless joints of elbow, wrist, and fingers, due to the curse of immobilisation, not for weeks but months, and when the splints are removed, I quite grant that there is usually a union of the bone, possibly in the most perfect alignment, but the joints above and below are useless and the muscles atrophied. Many of these cases may never obtain full power again. Muscles, and tendons, and joints must be looked after in the first place, the fracture will generally look after itself. I know nothing more heart-rending than to see some of these cases from various hospitals, who would, if properly treated, have had useful limbs.

My treatment of these fractures, as mentioned in the title, is mainly without splints, unless some application is found absolutely needful. In the first place, the treatment of these fractures places me in the position of a heretic, and I have been one for over ten years, but I can get no surgeon or doctor of my acquaintance to carry out my methods. For ten years now I have treated fractures in these regions without splints, and have never been disappointed, nor has there ever been a case of non-union or bad result. Cases have been shown at medical meetings long before the war. Since the war the same principle of treatment has been continuously carried out by me in cases of compound fracture, and the results have been most excellent, in some cases I may say, extraordinary. To understand my treatment, in the first place the action of muscles as a distorting agent is ignored. It is a horrible heresy, but if anyone with common sense considers the question, he at least will grant there are a great many points to be claimed.

A person falls on the outstretched hand and sustains a Colles' fracture, with very slight or possibly marked impaction, slight or marked deformity. What is the cause of this displacement? Surely not the brachio-radialis, but force. The fragments are loosened and set, and no displacement takes place.

A child falls on the hand or arm, and a greenstick fracture results, with the convexity of both bones to the ulnar side. The surgeon, under an anæsthetic, breaks the bones through completely, placing them in good position. He never worries about the action of the pronators pulling the fractured ends together, as certain text-books would have us believe.

Still taking as an example a fall on the outstretched hand, a fracture of the humerus occurs, and it takes place at the weakest spot, according to the angle at which the force is applied, but here at once the only teaching tolerated is the action of muscles which is wonderfully illustrated in surgical anatomy books and some books of anatomy. Certain authorities, even great authorities, would place such a fracture on some special splint, to obtain the benefit of muscular pull, or to neutralise the pull of muscles supposed to cause the displacement.

To pass from the upper extremity: A man breaks the femur above the condyles, with the result that there is displacement of the lower fragment backwards, to a slight, marked, or such a severe degree that the popliteal vessels are lacerated. Is this the action of the gastrocnemii inserted so very low down on the femur? Can any reasoning man say it is, though pictures and the approval of the profession, and, worst of all, the teaching and examining professors, emphasise the fact? Ask those same teachers and examiners what happens when a case of knock-knee is operated on by a surgeon. He divides the femur above the condyles by means of hard manual labour with a hammer and chisel. He then by force breaks the bone across the body. His whole attitude before the audience is force, hammer, chisel, strain, and at last the bone gives way. It is then forcibly placed in a straight position. What are the gastrocnemii doing now, not to support the principle of displacement which is taught? No one can believe that splints placed about the limb will prevent the displacement by muscle. It may be said that the fracture is a transverse one, and that broad surfaces in contact offer too great a mechanical opposition. Many years ago I saw a case of an adult man operated on for knock-knee. Before the operation with the knees together the feet were a yard apart. He was anxious to make a proposal of

marriage. After the operation the angle between the lower fragment and the upper was practically a right angle, so that here there was no engagement of broad surfaces. The man made an uninterrupted recovery, and I saw him some ten years later, to all appearance, and certainly as regards function, absolutely perfect. Here there was no sign whatsoever of any muscular displacement.

I have seen a fracture where there was a hole through the upper arm through which one could look, and the arm could be moved anyhow. The muscles never displaced the fragments unless when the arm was lifted voluntarily from the side, when the deltoid raised the upper end, and the lower fell by its own weight. This patient made a splendid recovery. This condition of things I have often tested, and tested with the X-ray screen. Muscles are the greatest help to the surgeon, especially when acted on by a patient with a sympathetic and intelligent brain, in the way of passive and *active* movements, and the result, steady but slow, is that by the time the union occurs, movements of the various joints are not only good, but the muscles have been kept in tone, and the patient rapidly regains complete power and use.

That there is cause for the maintenance of displacement there is no doubt. It may partly be muscular, but is to a large extent due to the coagulation of lymph and blood, together with the initial force, and combined with it the natural elasticity of the tissues.

The Treatment of Individual Fractures.

Fracture of the Clavicle.—The ordinary fracture of the clavicle is due, as a rule, to a fall on the point of the shoulder. The resulting displacement of the outer fragment inwards is due to the force, and the downward and forward displacement is due to the weight, of the limb. The various forms of bandages applied —Sayre's, Chiene's, the knotted handkerchief, etc.—are most excellent, when showing their advantages on a *sound* clavicle, but everything that is likely to approximate the shoulder nearer to the middle line will most certainly increase the deformity in the way of shortening, and that is what these applications do. Wharton Hood certainly made an advance when he only placed strips of adhesive plaster over the fracture. The first few days and nights, as in every case of fracture, are going to be unpleasant for the patient, splints or no splints, and the surgeon must try and arrange with pillows positions for the patient which will keep him comfortable, together with the judicious use of heroin.

Fig. 1.—Gunshot Wound, Right Arm, sustained 10th July 1916. Lacerated wound in front, 3½ ins. by 3 ins., biceps hernated and blown out. X-ray photograph taken 20th July 1916.

Fig. 2.—Photograph of Patient taken Seventy-four Days after Injury.

Fig. 3.—Radiogram of Gunshot Wound of Right Arm. Wound sustained 1st July 1916. 1¼ inch of shortening.

Fig. 4. Photograph of Patient taken Thirty-one Days after Injury. (Splints used at night to prevent pain from pressure distortion.)

Fig. 5.—Photograph taken Thirty-one Days after Injury.

FIG. 6.

FIG. 7.

Radiograms of Gunshot Wounds of Left Arm, sustained 28th July 1916.

FIG. 6.—Taken 5th August 1916, two days after admission to Edinburgh War Hospital.

FIG. 7.—Taken 11th August 1916, eight days after admission to Edinburgh War Hospital.

FIG. 8.—Photograph of Patient taken Twenty-seven Days after Injury. After-treatment by weight extension to elbow and sling to wrist.

FIG. 9.—Photograph of Patient taken Fifty-three Days after Injury.

At the end of a few days the brain has become educated to appreciate that there is a fracture, not only during the waking periods, but also during sleep, and the result is greatly increased comfort. By day, when the patient is up, he goes about with a sling supporting the wrist at a slightly higher level than the elbow. He is encouraged to move his fingers and do what he can with them, carefully to pronate and supinate, flex and extend the forearm, and gently try to move his shoulder joint and arm. All these movements should be carried out *just short of pain*. It is surprising how rapidly improvement takes place, and how soon the patient can put his arm into a coat sleeve. I have seen a patient treated in this way using his arm with perfect freedom, and it was said that he had non-union of the bone, and must be put in splints. A few years ago a doctor arrived at my house with his arm bound to his side. He had had a motor cycle accident, and the doctor in England who fixed up his limb said —evidently deeply impressed by Sir Arbuthnot Lane's teaching —he must have it plated at once. Like many doctors, the patient was not anxious for operation, but was so impressed by the doctor in the country, and the remarks then made, that he was ready to have operative treatment. As he did not object to some deformity and callus, so long as he had a perfectly useful arm, he carried out my treatment, and went back to his work in three weeks' time, putting on his coat himself and using his arm freely. Another patient of mine, who fractured his clavicle about February, won the first prize for "putting the weight" at the University Sports in June.

Fractures of the Scapula.—Fractures of the scapula are not common, but they are treated in exactly the same way as fractures of the clavicle, only in addition here passive movements, especially when the fracture is near the glenoid, are carried out as well, never so far as to induce pain, but always with the endeavour to get more and more freedom.

Fractures of the Humerus.—All fractures of the humerus are treated with the arm in a sling in a similar way. The only difference I make here is the application of a posterior splint with a lower projection to the upper arm for the first few nights, much depending on the character of the patient. The application of the splint is to prevent the patient lying on the arm, and having a restless night and obvious distortion the next day, but, even if this does take place, the arm straightens out during the time he is going about. From the first I encourage

active movements of the fingers and wrist, together with pronation and supination, and I try to make him flex and extend the elbow a little. Massage in all cases is very helpful, and enables one to take more liberty with the arm afterwards. In three or four days passive movement is of great assistance, lifting the arm gently from the side backwards and forwards, and bending at the elbow, as far as swelling and pain will permit. The most difficult position to attain is the complete extension of the elbow, and many do not attain it completely till the seventh or eighth week after the fracture. The patient should also be encouraged to practise all these movements frequently during the day, short of pain, but to increase the degree of movement every day if he possibly can. During the ten years this method has been carried out, none of my patients have had non-union, none have had delay in union, except one case that had to be kept lying down on account of a ruptured kidney and lacerated leg, and the fracture united and he was swinging a golf club at the end of the eighth week. All the patients were able to resume work by the eighth week where the fracture had been simple, but in one case there was involvement of the radial nerve in the callus, which required an operation to free it. In 1909 I exhibited, at a meeting of the Edinburgh Medico-Chirurgical Society, several cases of fracture of the upper extremity; fracture of the clavicle —perfect use in three and a half weeks; fracture of the greater tuberosity of the humerus—perfect movement in four weeks; fracture of the surgical neck of the humerus—perfect use in five weeks, returned to work in seven. The last patient I treated had sustained a fracture of the middle of the shaft of the humerus, and I permitted him to resume his work as a joiner just under seven weeks from the time of the accident. In the more recent cases of compound fracture—the result of shrapnel or gunshot wound—the results have been comparably as satisfactory. The actual wound is more or less ignored as far as the movement of the limb is concerned, and it is surprising how helpful active and passive movements are in keeping these wounds drained by driving out pus. The fragments, as they become loosened by granulation tissue, are removed, and the ultimate results are most satisfactory, considering in some cases the terrible associated lacerations of muscle. Exactly the same treatment is carried out for fractures in the region of the elbow, and when the patient's confidence has been obtained through the knowledge that pain is not going to be inflicted, very rapid and

remarkable mobility occurs. In 1906 I showed a case of supra-condyloid fracture of the humerus in a boy aged ten, who, at the end of six weeks, was carrying out all movements perfectly and strongly, and using a 10 lb. dumb-bell. I also showed a boy, aged three, with separation of the lower humeral epiphysis, whose sling was left off after three weeks, and the boy was discharged with all his movements complete in the fifth week.

Fracture of the olecranon is treated in an exactly similar fashion; the gap is ignored, and movement is encouraged on the same principles as the other fractures. In 1909 I first showed such a case in a man, who had as well Colles' fracture of both arms, and, in spite of troublesome œdema, his movements were very fair in four weeks.

I have treated many fractures of one or both bones of the forearm in the same way, and consider the results extremely good, whether the fracture be simple or compound, but here, from the interference with the powers of pronation and supination, at times a splint has to be applied for several hours, in order to overcome the tendency to pronation.

Fracture of the lower extremity, of course, is a different matter, but in fracture of both bones of the leg I have treated several patients by simply making them sit up in bed, with their legs hanging over the side. In none has there been any shortening, but in several there has been severe and painful swelling. In two there was marked delay in union, and in one bone-grafting had to be carried out for non-union. I am endeavouring to apply the same principles to the leg as to the upper extremity, but have not been able to perfect a method which would warrant me in making it public.

The photographs which are published with this paper do not show any signs of muscular pull.

I have to record my grateful thanks to Lieutenant-Colonel Keay, Officer Commanding Edinburgh War Hospital, Bangour; to Major Rankine for the X-ray photographs; and to Dr. G. E. W. Henderson, who most kindly made out the notes of the cases and took the photographs. To him I owe a great deal of the success in these cases for his painstaking work in connection with them.

THE FIRST STEPS IN THE LABORATORY STUDY OF PATIENTS.

By W. R. LOGAN, M.D., M.R.C.P.(Edin.), Temp. Capt. R.A.M.C.; ante bellum Clinical Pathologist to the Royal Infirmary, Edinburgh.

THE first steps alluded to are not taken in the laboratory; they are taken in the ward or at the bedside. It is on these steps that the value of bacteriological work on patients largely depends.

In former years the bacteriologist received specimens as gifts from the gods. His business was to examine and report on them. He seldom saw the patient from whom they came, had no say in the choice of laboratory procedure to be adopted, had little or no control over the method of collection of the specimens, and did not, as a rule, attempt to instruct himself by correlating what he found in the laboratory with the clinical signs and symptoms of the patient. He knew that a fair proportion of the specimens which he examined were useless for the purpose for which he was examining them. No one can claim that such laboratory examinations fulfilled the purpose for which they were intended.

The work of a modern clinical pathologist begins at the patient and ends in the laboratory. His speciality is the laboratory study of patients, in co-operation with the physician. The question of what laboratory procedures are to be adopted, at what period in the illness, and what interpretations are to be placed thereon, are matters for consultation between physician and clinical pathologist.

In the present paper is a brief account of the initial steps in the laboratory examination of some of the conditions in which such examination is important. It must be understood that these methods are those which I have personally found to be the most useful; other pathologists may have other modes of procedure which they prefer. Furthermore, with the steady progress in clinical pathology which always goes on, new methods must constantly be devised.

Let us take for first consideration a patient who is suffering from a pyrexia, the bacterial or protozoal cause of which it is desired to ascertain. During a prevailing epidemic it is natural that the first step taken should be to exclude the possibility of the case being part of the epidemic.

Enterica.—In cases of suspected typhoid or paratyphoid it is all-important that laboratory work should be begun within the

first week of illness. Blood-culture should be done as early as possible. In most cases of paratyphoid the eighth day is already too late for successful cultivation of the causal organism from the blood. In mild cases, especially in T.A.B.-inoculated subjects, the bacillæmia may last only three or four days, and a large number of such cases are probably undiagnosed because of failure to apply blood-culture at a sufficiently early stage. Any case with a continuous temperature of 101° or over, and the signs of toxæmia, gives promise of a positive result with this test. The taking of the blood must be left to the bacteriologist, as various special media have to be inoculated at the bedside before the blood has time to clot.

The Widal test is now a secondary test in enteric, and should be applied only if blood-culture has failed. This cannot be too strongly emphasised, nor the fact that, except in a small minority of cases, failure of blood-culture is due to its not having been done at the proper stage in the illness. In uninoculated cases the Widal test is still a useful subsidiary test, always remembering that the macroscopic and not the microscopic is that now generally employed, that the reaction of the serum against typhoid, paratyphoid A, and paratyphoid B must always be tested, and that therefore a much larger amount of blood must now be sent than was necessary in former years. The quill tubing in which the blood is collected is obtained from the laboratory, along with directions as to the amount of blood which is necessary, and, if required, instructions as to the best method of taking the blood. In an uninoculated case three or four Widals done at intervals of five to seven days will usually give a curve of agglutination, from which a correct diagnosis can be made; the first must be done during the first week of illness.

In cases which have been inoculated against T.A.B., Widals as a means of diagnosis are slow, laborious, uncertain, and unsatisfactory. To obtain an agglutination curve it is necessary to do the triple Widal at intervals of about five days throughout the illness, so that in many cases the diagnosis cannot be made until the patient is convalescent. In paratyphoid A infections the curve of A agglutination is usually sharp and transient, and, if the Widals are not begun at the outset of the illness, the rise and fall of A agglutinins may be missed; for this reason, when doing a blood-culture on a case I usually set aside some blood for the first Widal in case the culture should be negative. In typhoid and paratyphoid B infections the agglutination curve of the

non-infecting organism, *e.g.* paratyphoid B, in a typhoid infection, may be as high and as lasting as that of the infecting organism, making it impossible to risk a diagnosis. In other cases the agglutination curve is not a curve at all but an irregular line or a straight line. One such case, for instance, agglutinated B. typhosus to 1:100, B. paratyphosus A to 1:1000, and B. paratyphosus B to 1:3200, and further Widals gave the same result till the man was invalided home. As the infecting organism was never isolated, several stool examinations being negative, its identity was never discovered. He may have been an A or a B infection, or a mixed A and B infection, or, on the other hand, something else altogether, his high agglutinins being the result of his fairly recent T.A.B.-inoculation. As these strictures on the value of the Widal test in T.A.B.-inoculated patients are in opposition to the views of some other bacteriologists, I may say that they are based on a large series of cases which were proved by isolation of the infecting organism, in most cases from the blood, in some from the stools, and in which Widals were done during the course of the illness by Captains N. S. Carmichael and B. J. Ryrie and myself. Had the diagnosis rested on the Widal test, a large proportion would have remained undiagnosed and some would have been wrongly diagnosed.

The third method of laboratory examination in enteric is by isolation from the stools or from the urine. Only a relatively small number of positive results is obtained in this way, although when a bacillus of the group is isolated the diagnosis can scarcely fail to be a correct one. The only exceptions are those rare cases where the man was already a carrier of one of the organisms of the group. Stools should be fresh, and there is more likelihood of success if sent during a period of diarrhœa. In constipated cases a specimen from the result of a purge should be sent, if the patient can stand one. Specimen after specimen should be sent in undiagnosed cases which clinically resemble enteric.

But may I again point out that if the bacteriologist is called in *early* in the course of enterica, the organism can usually be isolated from the blood, the diagnosis made with certainty, and all the delay, wasted labour, and doubt in diagnosis involved in the other procedures avoided.

Cerebro-spinal Fever.—Lumbar puncture must be done by the bacteriologist himself if culture of the meningococcus is desired, as the inoculation of the special media should be done at the bedside or as soon after the puncture as possible. If the puncture

has by chance been done by some other person, he must see that the fluid is kept warm, and that it is in the pathologist's hands with the least possible delay; the apparatus used should of course have been sterilised by boiling and not by means of antiseptics; if antiseptics have been used the fact should be mentioned.

In examinations of contacts and carriers the bacteriologist should himself take the swabs, as the media must be directly inoculated without delay.

Malaria.—In suspected cases two films should be sent to the laboratory each day till the cased is proved. Theoretically the most favourable time is when the temperature is falling or just after it has fallen. In practice, at all events in Salonika malaria, it is rare to find all the parasites at the same stage of development. It must be remembered also that in chronic subtertian cases there may be complete absence of pyrexia although the peripheral blood contains large numbers of crescents.

Influenza.—Supposing influenza is suspected, the laboratory examination will usually be of nasopharyngeal swabs, and, if any be available, of sputum. Blood-culture as a rule gives negative results, except where there is a secondary infection, *e.g.* a streptococcal or pneumococcal pneumonia; it will therefore be of value chiefly in eliminating other conditions, such as enteric. The blood-culture must be done by the pathologist himself, as special media must be inoculated at the bedside.

As regards swabs, it is necessary that the throat should be free of antiseptic before the swab is taken, and that the latter should be in the pathologist's hands with the least possible delay.

In sending sputum for isolation of the influenza bacillus (1) the specimen must be as fresh as possible; (2) it must be free from any trace of antiseptic; (3) it should be as free from mouth organisms as possible; and (4) it should be collected and transmitted in a sterile receptacle.

Septicæmia.—Blood-culture must be done by the bacteriologist himself.

Diphtheria.—Two throat swabs should be sent at a time in order that there may be ample material to make both cultures and films.

Syphilis.—Where microscopical examination of chancre, mucous patches, papules, etc., is required, the pathologist should be asked to come and collect his own specimens or the patient sent to the laboratory. If this is impossible, the best description that I have seen of the methods to be adopted are given in Lieutenant-Colonel

L. W. Harrison's *The Diagnosis and Treatment of Venereal Diseases in General Practice* (Frowde and Hodder & Stoughton, 1918). They are too lengthy to be given in detail in the present paper.

For the Wassermann test I believe that blood should always be taken from a vein. In my experience, if an attempt is made to get the blood from a finger or from the ear the patient has, as a rule, to be pricked more than once, and ultimately suffers more pain, the operation takes longer, and the result is frequently failure to obtain sufficient blood. For vein puncture the minimum apparatus necessary is a sharp hollow needle and a sterile tube. Personally, I prefer to use a syringe, because (1) a finer needle can be used and the operation rendered almost painless; (2) the syringe gives the operator something to grip and renders it easier for him; (3) the operation is quicker; and (4) there is no danger of the blood clotting in the needle. Not less than 5 c.c. of blood, which is about an inch deep in a test-tube of the common size (6 ins. by $\frac{5}{8}$ in.), should be sent.

The instruments must be sterilised by boiling and not by means of antiseptics, and the syringe must be cool before the blood is drawn into it.

Gonorrhœa.—In making films from men the prepuce should be pulled back, the mouth of the meatus cleansed with spirit and allowed to dry. Secretion is squeezed out from the urethra, one drop collected by a platinum loop and placed on a slide; a film is then made, either with the platinum loop, or preferably by means of another slide, as in making a blood film.

In women the chief difficulty which must be overcome is that of contamination. Films made from the mixed vaginal discharge are nearly always useless. They should be made with the utmost care from the discharge coming from the affected part—urethra, cervix, etc.—using a procedure analogous to that adopted in male cases.

Where cultures are required, as for preparation of vaccines, the pathologist must inoculate his media direct from the patient. The gonococcus is very highly parasitic and difficult to cultivate on artificial media, even under the most favourable conditions. Where material is sent to the laboratory for cultivation there is practically no possibility of success.

In microscopical examination of urine for gonococci the specimen must be absolutely fresh; no attempt at cultivation of the gonococcus would ordinarily be made from urine.

Dysentery and Diarrhœa.—For successful identification of

E. histolytica or its cysts, or the isolation of dysentery bacilli, it is all-important that the specimen should be fresh. Every minute that elapses between the passage of the motion and its arrival in the laboratory makes success less likely.

MacConkey plates made from a dysenteric motion within half an hour of its passage may show almost no colonies save those of dysentery bacilli, while MacConkey plates made from the same motion eight hours later may show almost no colonies save those of *B. coli*. For the identification of *E. histolytica* the necessity for fresh specimens is even greater. The amœbæ rapidly shrink, and it becomes impossible to distinguish them from *E. coli* and from body cells.

If blood and mucus be present a portion of mucus should always be included in the specimen, as it is from this portion that successful cultures are usually made. There must be no urine mixed with the specimen and no antiseptic. If the specimen is suitably collected there is no necessity for sending more than will quarter fill a 3-inch-by-1 fæces collection tube.

It must be remembered that in chronic diarrhœa following bacillary dysentery the percentage of successful isolations of dysentery bacilli is very small. From acute cases, on the other hand, who are passing blood and mucus, a good laboratory should be successful in from 60 to 70 per cent. of *specimens* and consequently in a considerably higher percentage of *cases*.

The diagnosis of bacillary dysentery by testing the agglutinating power of the patient's serum against B. dysenteriæ Shiga, Flexner and Y, is not to be recommended as a routine procedure.

Cultural Examination of Urine.—The specimen must be taken in a sterile manner into a sterile tube or flask. It is a waste of time to examine for B. coli, for instance, a urine which is sent in a non-sterile flask or bottle. I know of no procedure for obtaining urine from the bladder per urethram which can be absolutely guaranteed to add no urethral organisms to those of the bladder in the specimen; but one can at least ensure that there shall be no other sources of contamination.

Puncture of Chest.—The same remarks as to all specimens—no antiseptics and the least possible delay in transmission.

Wounds, Abscesses, etc.—Where pus is present in large amount it is of course sent to the laboratory in a sterile test-tube. In wound examinations it is best for the pathologist to make his films and cultures direct from the patient, the laboratory being notified of the time when the wound is going to be dressed; this

is especially necessary in gas gangrene, tetanus, or other wounds from which anaerobes are to be isolated. If this is not practicable, two throat swabs may be inoculated from the wound and sent to the laboratory.

In Conclusion.—I have not attempted in this paper to give details of the technique in most of these preliminary steps, but only to outline what the steps should be. I almost feel that I must apologise for the rather wearisome repetition of remarks about mixture with antiseptics and delay in transmission from patient to laboratory, but if it were more generally known how many specimens are spoiled by failure in this respect, I think I should be forgiven.

INCOME TAX INFORMATION.

By JOHN BURNS, W.S., Edinburgh.

I.

In dealing with one's income tax matters the things to aim at are —first, to endeavour not to pay too much tax, while of course making a full and honest disclosure and paying up to the proper limit; and second, to see that any excess which must be, or at any rate has been, paid is got back on a repayment claim. The whole position may at present be, if necessary, overhauled back to 5th April 1915. Owing to the war the tax liabilities and rules have varied greatly during the four tax years thus involved. The tax year is always 6th April to 5th April.

The Taxable Income.

To enable one to get a grip of the main lines on which this taxation proceeds it is necessary to keep in view the following rules or aspects:—

Aggregation of Income.—That is to say, the total income of all kinds, from all sources, must be added together in order to fix the tax bases, *e.g.* the rate or rates of tax, the right to abatements, the amount of abatements, and liability to super-tax. The main divisions of income are—professional profits, pensions, annuities, rents, including the house in which you reside if it belongs to yourself or your wife, and dividends and interest on investments. But as to all heritable property, it is important to note that you put down, not the gross rent, but only the net Schedule A assessment. This is sometimes overlooked; it makes a considerable and sometimes a vital difference.

Wife's Income.—This is one special aspect of the preceding. No matter what the law in other branches may say, and no matter what is contained in any will or marriage settlement, the wife's income must be added on to her husband's in order to arrive at the taxable unit. This assumes that they are living together. There is an exception as regards the wife's income *earned* in a separate business or employment from her husband's, and provided the total income of both spouses does not exceed £500.

Statutory Income.—Income tax law makes no claim to be logical or precise. It aims at a rough and ready approximation. A medical man is taxed, not on his year's actual professional

income, but on an assumed "statutory" income, the figure being reached by taking the average of the preceding three years. It is to be carefully noted that the figures on which the average is based are, not the sums on which tax was levied in those three previous years, but the accurate results of each of those three years as ascertained at the end of each. But no matter how accurately you get out the figures of 1915-16, 1916-17, and 1917-18, that is no guarantee that you will this year make one-third of the total of those three years. Yet this is the tax basis. To this there are some exceptions which cannot be altogether passed over, but neither is there space to explain them fully. During the first three years of a new practice, the actual figure of each year may be taken. Also if and when (which must rarely happen) a practice is, on retirement, simply scattered to the winds and not sold to a new-comer, the retiring doctor or his representatives may overhaul the last four years and bring them down to the actual results. A purchaser of a practice is entitled to take the average of the vendor's last three years, but if it pays him better it can be treated as if it were a new practice; this holds until he has been full three years in it. In the case of a firm the death or retiral of a partner gives the same option. There are also war exceptions which we shall notice later.

Public Appointments.—The kind of professional income to which we have been referring is what is taxed under Schedule D. But public appointments are charged under Schedule E, and the rule is different. It is the actual income of the year from that source. This seems the best place at which to mention the helpful rule that taxable income must be cash or something which you are entitled to turn into cash. It is not enough that it is as good as cash or what is correctly called "money's worth." Thus valuable adjuncts to public appointments are not taxable; nay, more, they are not income at all for this purpose, and so they do not swell the total income. Instances are—free houses or residential quarters, board, fuel, light, and service. All these save outgo, but that does not make them income.

Deductions.—What is taxed is net income. Thus all expenses of earning the income must be taken off. Also all "legal burdens" on the income.

Expenses include rent or annual value of premises used exclusively for the practice; proper proportion of rent or annual value of premises used also as residence but only according to part used for the practice, and not exceeding two-thirds whether owned

or rented; rent or annual value of garage or stable; inhabited house duty and tenant's rates corresponding to the above, also share of heating and lighting; assistants and *locum tenens;* service applicable to the practice, including coachman, chauffeur, maid-servant, also secretary or book-keeper; travelling, including railway, car, or carriage, etc., not first cost of car, carriage, or horses, but all running expenses, repairs, and renewals, less salvage; instruments, medicines, professional subscriptions and literature, telephone, telegrams, stationery and postage; bad and doubtful debts, but not if the cash system (explained below) is followed.

It is understood that in some districts the deduction of professional subscriptions and literature are objected to. Of course, no one would propose to deduct the initial cost of a medical library, but it is thought that reasonable upkeep of an existing library, in order that it may be maintained at the level of professional development, is a proper deduction.

Legal burdens include feu-duties and other ground burdens, mortgage interest, interest paid to bank, interest payable to vendor on unpaid price of practice, any annuities, and generally any charges legally payable. All these go to reduce the true net income. The position is a little confusing. Suppose income £1050 but feu-duty £50, that makes taxable income only £1000, which gives a lower rate of tax, and may also give an abatement for children, both of which would be denied to one whose true income was £1050. But nevertheless you are taxed on the £50 in addition, and not only so, but at the maximum rate of 6s., which gives £15. But then this is because when you pay the £50 feu-duty you do so under deduction of a 6s. tax, and so you pay only £35 to the feu-duty owner. This £15 you must hand over to the Exchequer, for whom you are this respect an unpaid tax-collector. That explains the assessment referred to.

But interest paid to banks is an exception, the difference being that it is invariably charged and paid gross without deduction of tax; this means that the person who has paid it must obtain a corresponding income tax relief, either in the form of a reduction of his Schedule D (or other) assessment, or, failing that, then by a repayment claim to the Inland Revenue Department. We do not doubt that this is often omitted and that much loss of tax is incurred accordingly.

Cash or Earnings.—There are two different ways of making up the professional accounts. We understand that the cash method is by far the favourite in the profession. Under that system

you take no account of fees earned but not received or expenses incurred but not paid. Instead you go on the sure and simple basis of what you have actually got in and paid out. Of course the other items will come in to account next year or in some future year. Under the earnings system you estimate fees earned though not received and expenses incurred though not paid, and all these go down. Any necessary corrections arising on future actual receipt or payment are given effect to when ascertained.

Differentiation.—This means the classification of incomes as earned and unearned. It holds in favour of earned income till the total income exceeds £2500. Till that figure is exceeded, the earned always pays a lower rate of tax than the unearned. Roughly, "unearned" income is income from investments. Pensions are earned.

Abatements are given on a number of different grounds. Generally the object is to relieve small or moderate income, but that is not true universally, for the life insurance abatement knows no income limit. Full detailed particulars will be given in the next article, but at this point the important thing is to get a clear understanding of the essential difference between "deductions" and "abatements." They work entirely differently. Suppose the professional (and only) income on the proper average basis is £1200, but that there is a liability to a bank for £200 of annual interest, that £200 is a deduction and the income is only £1000. But say that the £200 is not a debt at all but is the annual amount of insurance premiums which the doctor pays on his own life, that £200 is not a deduction but only an "abatement." In the former case—because the "income" is £1000—the rate of tax is 3s.; if the doctor has six children under sixteen years of age, four of them count for the "children" abatement, which sets free £100 of income; and on the other hand, though he may pay £200 of life premiums, not more than £166 could count for the insurance abatement, for that is the maximum limit, namely, one-sixth of the "income," which is £1000. In the latter case (no bank interest)—because the "income" is £1200—the rate of tax is 3s. 9d.; there can be no children abatement, and the whole £200 passes as insurance abatement. It is thus seen that "deductions" are deductions from income; "abatements" are abatements of income tax.

A Partner's Share.—The rule for ascertaining a partner's share of the firm's profits for income tax purposes is to take the actual profits of the firm for the past three years (whether he was then

a partner or not), to assume that the average of these years is this year's profit, and to take the share thereof corresponding to his present interest in the firm. Thus if he joins this year and his share is one-third, and the previous years have yielded £1500, £2000, £2500, the average is £2000, and the new partner's taxable income is £666, no matter what the fact may be. The result would be the same if he had been in the firm during the three average years but with only a one-fourth share.

THE TRAINING OF THE STUDENT OF MEDICINE:

An Inquiry Conducted under the Auspices of the Edinburgh Pathological Club.

LVI.—FORENSIC MEDICINE AND THE CURRICULUM.

By Professor HARVEY LITTLEJOHN.

I do not propose to detain you very long to-night, because, while I am second to none in regarding forensic medicine as a valuable and necessary part of the curriculum, I quite recognise that it has not the same importance as many of the other systematic subjects and that it is more capable of being easily adapted to a new curriculum scheme, subject to certain conditions which I shall mention later.

Forensic medicine may be described as the subject which enables medical men to discharge their duty to the State in relation to the law of the land. It brings before the medical student the relationship between the law and the subjects which he has already studied—medicine, surgery, midwifery, etc.—and shows him their application to the administration of justice. It may also very properly include instruction upon the relationship which should exist between a medical man and his colleagues on the one hand, and medical men and their patients on the other—so-called medical ethics, or that knowledge which enables the medical man to formulate his life and conduct, both in a professional and public respect, according to the rules which ought to guide us as members of a liberal profession.

I will only refer very briefly to three questions in connection with the subject of to-night's discussion, viz.: First. When ought forensic medicine to be taught? Second. What ought to be taught? and Third. How ought it to be taught?

In regard to the first proposition—When ought forensic medicine to take its place in the curriculum?—I have no hesitation in advising that it should come not earlier than the end of the fourth year of study; that is, after the student has attended qualifying courses in surgery, medicine, and midwifery, and also in mental diseases. I think it is practically useless to attempt to give a course in forensic medicine unless a student has a knowledge of these subjects. It must be apparent to all that it is only a waste of time to discuss, for example, criminal abortion with undergraduates who have no knowledge of pregnancy, delivery, or the ordinary causes of abortion; or to talk to them of wounds in their medico-legal aspects when they have had no surgical instruction; or again, to deal with the symptoms of opium poisoning when they have not had a course in medicine and are unable

to appreciate points in the differential diagnosis from other causes of coma.

After twenty-eight years' experience in teaching I am convinced that it is not possible to deal satisfactorily with the subject in a course of less than fifty meetings, notwithstanding the fact that I only attempt to give an elementary course.

When we come to the question of what ought to be taught, I hold that, so far as the undergraduate is concerned, the object of the teacher ought to be to give such instruction as will enable a medical man to deal with the medico-legal cases which he will meet with in the general practice of his profession. The great majority, we must remember, of those who enter the profession will take up general practice, and in my opinion the aim ought to be to enable them to acquit themselves in the witness-box or elsewhere when acting in a public capacity without discredit either to themselves or the university and profession to which they belong. That, one may say, is a low educational standard, but it is a practical and very important standard to maintain, and seems to me much better than attempting to impart knowledge which has no direct relation to their future work. We must aim at sending out men qualified to deal with the ordinary medico-legal problems which are of frequent occurrence in general practice: for example, in the case of a newly born child which has been found dead, the doctor, by post-mortem examination, should be able at once to determine whether it has lived or not, and whether therefore it is a case demanding police investigation, or, on the other hand, that judicial proceedings are unnecessary. Again, in connection with charges of criminal assault upon women and children, which are so very common all over the country and which entail a heavy responsibility upon a doctor, since it is usually upon the medical evidence that cases proceed to trial, he should be thoroughly acquainted with the methods of examination and the proofs upon which guilt or innocence depend.

In many schools, though more so in the past than at the present time, I venture to think that a great deal too much stress is laid upon toxicology; indeed in some schools one half or more of the time devoted to forensic medicine used to be spent on toxicology. This appears to me to be absolutely useless. The medical practitioner ought to know the symptoms of poisoning, the characteristic post-mortem appearances, and he should have a knowledge of the treatment of cases of poisoning, but the question of the chemical recognition of poisons is not a matter for the general practitioner. He is not competent to deal with this aspect of toxicology from any teaching that could be given to him in an elementary course, nor ought he ever to be called upon to do an analysis in connection with a criminal charge, since this is essentially a matter for the trained and expert chemist. A medical practitioner

must, however, be able to perform the post-mortem examination in a case of suspected poisoning in such a way that it will afford the expert chemist all that he requires for a satisfactory analysis.

Thirdly. How ought forensic medicine to be taught? The instruction, as I have indicated, should be elementary and in the form of lectures, illustrated by specimens, lantern slides, and photographs, but, above all, it should be made, as far as possible, practical by demonstrations on the living and the dead. I do not think that the systematic lecture can be altogether discarded, and especially when given by a teacher who has a practical knowledge of the subject. Such lectures are useful in indicating to the student what parts of the many good text-books at his disposal will repay careful study, while he can, from his own experience, illustrate in a striking and practical manner many of the difficulties which frequently occur.

While demonstrations on the living, as for example of wounds and other forms of violence as well as cases of mental unsoundness, should be given, yet it is with the dead that forensic medicine is chiefly concerned. The dead body is to the medical jurist what clinical material is to the physician and surgeon, and what the post-mortem room is to the pathologist. A student must be made to see and do things for himself, and such practical training is no less important and valuable in forensic medicine than in other branches of the curriculum. To demonstrate to a class a case of hanging, drowning, overlaying, etc. is worth hours of lecturing, and leaves a mental impression which is never effaced and proves of inestimable value to the student in his future career. What comparison can there be between lectures on infanticide and a single practical demonstration on a newly born infant of how to determine the questions of maturity, respiration, live birth, and the cause of death? in fact the whole of the problems involved in a charge of this nature may be dealt with in a single demonstration and in a manner impossible in the lecture-room.

In addition to the opportunities afforded for practical study in the mortuary, the teacher of forensic medicine must have a laboratory in which students can make themselves familiar with the methods of examining blood-stains under various conditions and in such a manner as to afford evidence satisfactory for a Court of justice. They should be able to apply the tests in suspected carbon monoxide poisoning and must have practice in the recognition of seminal stains as well as proficiency in the use of the microscope for medico-legal purposes.

It may be argued that the opportunities for practical instruction such as I have outlined are impossible to provide. This, no doubt, is true to some extent, but the difficulties in the way are not insuperable. Much may be effected by means of an understanding with the pathologist of the hospital, but it is equally essential that the teacher should be in close association with the police, holding the office of

police surgeon if possible, so that he will have at his disposal, for instructional purposes, cases of assault, mental derangement, etc., and also bodies which are removed to the police mortuary. This association of police work with the professorship of forensic medicine has fortunately been secured in Edinburgh, and the arrangement was largely due to our late principal, Sir William Turner, who saw the importance of our students getting as much practical instruction as possible. A similar arrangement should not be difficult in other medical centres; and even in England, where the criminal procedure is somewhat different, an understanding with coroners might be made which would permit of students having similar opportunities to those enjoyed here.

A difficulty which exists in connection with all practical teaching is caused by large classes. While it is possibly a stimulus to lecture to a large number, efficient practical teaching is out of the question unless the numbers are limited. How this problem is to be solved I do not know, since at present, although I subdivide my students into sections so far as possible, the numbers are still too large to secure satisfactory practical teaching.

DISCUSSION.

Dr. Dickson said that his most vivid recollection of his course in forensic medicine was that of Professor Sir Henry Littlejohn taking his class to the Court of Justiciary, where they saw a criminal trial and learned the first principles of the laws of evidence in medico-legal cases.

Dr. Matheson Cullen.—I have an opportunity, to some extent unique perhaps in Scotland, of meeting men all over the country. One thing that has struck me particularly is the enormous amount of rivalry between doctors; many of the differences between doctors arise from the fact that they do not freely and frankly talk things over together, and do not understand the proper relationship which should exist between them. The reason very largely is that medical ethics do not form part of the curriculum. Three lectures in this subject are quite insufficient; it should form a very important part of the discussion on forensic medicine.

Dr. J. V. Paterson, referring to the question of medical witnesses, said that there should be absolute neutrality in the witness-box. Men should not go into the witness-box primed by lawyers to give evidence in favour of this man or that. In cases involving questions of ophthalmology, for instance, men go into the witness-box and give very vague and misleading evidence. This has, however, been improved by the appointment of medical assessors. This neutral point of view could be inculcated in the students' minds by no one better than by the professor of forensic medicine.

LVII.—THE TRAINING OF MEDICAL STUDENTS FOR GENERAL PRACTICE.

By J. W. CRERAR, M.B., F.R.C.S., Maryport.

WHILE fully sensible of the honour done me by the Committee of the Pathological Club, I feel a natural diffidence in offering any opinions on medical education to a body of men whose time and efforts are chiefly devoted to its exposition. With the knowledge, however, that Sir James Mackenzie, who delivered the opening address of your course, was once a general practitioner (and may I suggest that his achievements and authority have given a new dignity and importance to the calling of the general practitioner), and with the recollection that the bulk of the students who pass through your hands are destined to become general practitioners like myself, I was emboldened to essay a contribution towards the problem you are engaged in considering.

It seemed to me that I could most usefully occupy your attention by endeavouring to place before you some aspects of the general practitioner's daily work. You can hardly have that intimate knowledge of such work and its conditions which a man who has spent a quarter of a century in general practice should have gained. The preponderating majority of the students who fill your classes, for whose education you are responsible, and who, throughout their lives, will bear the impress of your teaching, are men and women who go out into the world as general practitioners. It is unnecessary to speak of the importance of their duties. It is enough to say that the medical tendance of the nation is largely in their hands. I am encouraged to hope that I shall not be wasting your time if I venture to suggest some considerations arising out of general practice which appear to me to have a direct bearing on the character of the training given in our medical schools.

I shall deal first with the question of *Industrial Accidents*. During the past three years I have had a special opportunity of observing the character of the accidents which occur in industrial life. In March 1915 Dr. Harper, who is the medical officer to the Cumberland Coal and Iron Ore Mine Owners' Indemnity Company, obtained a commission in the R. A. M. C. His duties mainly consist in examining and reporting on the workpeople injured in the coal mines, the iron ore mines, the steel and iron works of Cumberland. In order to "carry on" for him, Dr. Fletcher of Workington, Dr. Pratt of Whitehaven, and I distributed his work amongst us. I have therefore been responsible for examining and reporting on about one-third of the workpeople involved.

For the purpose of this analysis two full years have been taken—1915-16 and 1916-17. I had to decide the category into which a given case had to be placed, and have taken as my definition of a "serious accident" an accident (apart from those fatal immediately or in a few hours) which threatened life, or led to a definite and permanent loss of earning capacity. The figures for the "serious cases" do not include those fatal immediately or in a few hours. This diminution is probably offset by the fact that certain serious cases which came under my observation incurred the accident before March 1915. On the other hand the figures for the "minor cases" do not include those so slight that work was resumed in a few days. All the cases enumerated were therefore in receipt of weekly compensation payment.

The criterion I have chosen is therefore one of *results*, and is reliable only in so far as my judgment is correct in the assignment of the cases.

For the purpose of more ready illustration the figures are presented in the form of graphs.*

It will be observed that the "minor injuries" exhibit an immense preponderance over the serious cases. Of 806 cases 92·6 per cent. fall into the category of "minor" accidents, and 7·3 per cent. into that of "major."

It may be of some interest to you, although not necessarily relevant to the inquiry, to note the distribution of injuries throughout the body. In the upper extremity, the site of 46·9 per cent. of the whole of the injuries reported on, the majority (83·8 per cent.) were those of the fingers, thumb, hand, and wrist—the most actively engaged of the component parts of the upper limb. In the case of the lower extremity, where injuries were 32·3 per cent. of the whole, the distribution, as one would expect, is more equal throughout the limb; the toes, foot, and ankle being responsible for 49·7 per cent.

Direct injuries to the skull and spine were nearly all serious, as was the case also with burns in coal pits.

I venture to suggest that these figures bear out the contention that minor injuries constitute the preponderating majority of all industrial accidents, and when it is realised that linseed poultices are still employed in the treatment of septic wounds, and carron oil in the treatment of burns, it is not too much to hope for that treatment directed towards the adequate primary disinfection of wounds, rendered, as is perfectly feasible, by foremen in pits or works immediately after the receipt of the injury, with satisfactory subsequent care, would so diminish sepsis as to expedite recovery and largely prevent disabling sequelæ.

* Owing to the exigencies of the war it is not possible to publish the graphs.

I am convinced that the experience of insurance societies and indemnity companies dealing with payments under the Workmen's Compensation Act would demonstrate that the bulk of their expenditure is in relation to injuries which would be classed as minor, and as these payments are based on average weekly earnings they are a direct index of the working time lost to the nation. In the case of a people so largely devoted to industrial pursuits as our own it is clear that the expediting of recovery (apart altogether from prevention) of minor injuries would lead to a great increase of industrial efficiency.

It is of the utmost importance, from this standpoint alone, that students should be thoroughly trained in the treatment of minor injuries. Regular and prolonged attendance at the surgical out-patient department should be required. It is not sufficient that such attendance should be restricted to a definite period of three or six months. It should form a part of the practical training given throughout the whole of that period of the student's career which is devoted to the clinical study of his profession.

With such preliminary training the general practitioner will become, what he ought to be, the specialist in minor injuries.

I shall now attempt to give you as clear and complete a picture as I can of the actual daily work of a *general practitioner*. To this end I have made an analysis of my own practice for certain months, and I depend largely on graphs for its illustration. The first graph is not of much importance. It indicates the average monthly proportion of visits at patients' homes and consultations in my own house.

To indicate the *ages* at which patients consult their doctor, graphs have been made for the months of June and August 1917 and of March 1918. Doubtless the war has had some modifying effects on the figures for early adult life—so many young men having joined the Army, and so many girls and young women having entered munition factories. The most uniform feature is the large number of cases attended during the first ten years of life, indicating the necessity of adequate training in *children's diseases*.

An analysis of *sexes* between the ages of twenty and ninety years for June 1917 and March 1918 shows that more women than men came under treatment, but possibly this may not be the usual proportion, as, not being on the panel, my practice may be affected by the fact that it is almost entirely private. I make no claim, therefore, for any of these data except that they represent actual personal experience in general practice in an industrial area, and personal experience is the only justification for my addressing you to-night.

As in the case of industrial accidents, an attempt has been made to differentiate between minor and serious cases. A different standard has been employed. In the case of accidents the distribution was determined by *results*. In this analysis the criterion is one of

probabilities and *possibilities*. A case is adjudged to be "serious" when there is the probability or possibility of the occurrence of death, of grave illness, of serious interference with the general health or with the full capacity of any organ.

Somewhat arbitrarily a distinction has been drawn between children's illnesses and those of adults, the age of fifteen years having been taken as the dividing line. It will be observed, contrary entirely to my expectation when the analysis was begun, that the proportion of "serious" cases is high—13 out of 87 in children under 15 years and 97 out of 229 cases above that age. It seems desirable therefore to consider in more detail the character of the diseases. At the risk of boring you, I ask your attention to the classification of the actual cases entering into the analysis exhibited by the diagram. It is not to be understood that these are all fresh cases seen during the month of June 1917, but every case enumerated was actually attended or under actual supervision in that time. Some, as will be evident, are chronic cases. In a few the diagnosis of the definite morbid condition present was arrived at subsequently. For the basis of the classification I have followed that employed by Sir William Osler in his text-book, modifying it to allow of the inclusion of surgical conditions and affections of the special senses, etc. In certain instances cases are counted more than once in accordance with the involvement of more than one organic system.

Cases under Treatment or Supervision, June 1917.

Specific Infectious Diseases
- German measles 1
- Whooping-cough 7
- Pneumonia (lobar) 1
- Septicæmia 1
- Syphilis { acquired { general 1 / cerebral 1 } / congenital 1 } . . 3
- Tuberculosis { lymphatic glands 1 / lungs (phthisis) 3 / hip 1 } . . 5

Intoxications and Starvation
- Sunstroke 1

Constitutional Diseases
- Arthritis deformans 4
- Chronic rheumatism 1
- Diabetes mellitus 1
- Rickets 5
- Infantile { malnutrition 1 / dentition 2 } . . 3

Diseases of the Blood and Ductless Glands
- *Blood*
  - Anæmia (chlorosis and secondary) . 17
  - Anæmia (progressive pernicious) 1 & (?)1 2
- *Thyroid*
  - Exophthalmic goitre 1
  - Hyperthyroidism 3

Diseases of the Digestive System
- *Mouth*
  - Acute catarrhal stomatitis . . . 1
  - Leucoplakia buccalis 1
- *Pharynx*
  - Subacute pharyngitis 2
- *Tonsils*
  - Acute follicular tonsilitis . . . 1
  - Acute suppurative tonsilitis (quinsy) . 1
- *Œsophagus*
  - Carcinoma { opposite cricoid 1 / gastric junction 1 } . . 2
- *Stomach*
  - Gastric dyspepsia 16
  - Chronic gastric dyspepsia . . . .
  - Gastric hæmorrhage 1
  - Carcinoma of stomach 1
  - Duodenal dyspepsia 2
  - Duodenal ulcer . . . . .
- *Intestines*
  - Catarrhal enteritis (diarrhœa) . .
  - Diarrhœal diseases of children . . .
  - Appendicitis { catarrhal 1 / suppurative 1 } . .
  - Constipation 1
  - Colitis { simple 1 / ulcerative 1 } . .
  - Hæmorrhoids 1
  - Perineal fistula 1
  - Hernia (inguinal) 1
- *Peritoneum*
  - Suppurative peritonitis (appendicitis) . 1

Diseases of the Respiratory System—

Nose—

Epistaxis	1
Fetid atrophic rhinitis	1
Sinusitis (catarrhal frontal)	1

Larynx—

Acute catarrhal laryngitis	1

Bronchi—

Acute bronchitis	5
Chronic bronchitis	1
Bronchial catarrh	11
Bronchial asthma	7
Bronchiectasis	1

Lungs—

Broncho-pneumonia	2

Pleura—

Acute pleurisy (plastic)	2
Empyema	1

Diseases of the Kidneys and Genito-Urinary Organs—

Acute nephritis (trench)	1
Chronic nephritis	1
Renal calculus	1
Hæmaturia	1
Retention—enlarged prostate	1
Stricture of urethra	1
Phimosis	1

Diseases of the Circulatory System—

Heart—

Chronic valvular disease (including senile heart disease)	15
Angina pectoris	1

Arteries—

Arteriosclerosis	9

Diseases of the Nervous System—

Afferent System—

Locomotor ataxia	1

Diffuse and Focal of Spinal Cord—

Syringomyelia	1

Diffuse and Focal of Brain—

Cerebral hæmorrhage	1
Cerebral embolism	1

Peripheral Nerves—

Neuritis	1
Sciatica (a missed case—rectal carcinoma)	1

General and Functional—

Paralysis agitans	1
Acute chorea	1
Epilepsy	7
Neurasthenia	1
Senile dementia	1
Hysterical contracture	1
Old age	4

Obstetric and Gynæcological Cases—

Confinements	5
Hyperemesis gravidarum	1
Abortion	1
Ovaritis	1
Endometritis	2
Prolapsus uteri	2
Ovarian cyst	1
Vaginitis	1
Pelvic cellulitis	2
Menopause	2

Diseases of the Mammæ—

Carcinoma (scirrhus)	2

Diseases of the Eyes—

Conjunctivitis	1
Dendritic keratitis	1
Traumatic ulcer of cornea	1
Cataract	1
Glaucoma (simplex)	1
Superficial injury to cornea	1
Refractive errors	2

Diseases of the Ears—

Cerumen	3
Otitis media (chronic)	3

Diseases, etc., of the Skin and Subcutaneous Tissues—

Impetigo	5
Seborrhœa	2
Ringworm	2
Scabies	3
Lupus { vulgaris 3 / erythematosus 1 }	4
Acne rosacea	1
Superficial mevus	1
Eczema	1
Prurigo (?)	1
Pruritus ani	1
Boils	3
Venereal warts	1
Varicose ulcer	3
Subcutaneous abscesses, including whitlows, etc.	9
Burns (superficial)	1

Accidents to Bones and Joints—

Colles' fracture	1
Sprain of elbow	1
Fracture of humerus at elbow	1
Dislocation of shoulder	1
Fracture of tibia (simple)	1
Compound fracture of tibia and fibula	1
Fracture of shaft of femur	1
Fracture of neck of femur	2

Crushes, Bruises, Wounds, etc.	19

I apologise for inflicting such an arid catalogue upon you, but it serves the purpose of demonstrating that the proportion of serious to minor cases has not been reckoned too highly. It also demonstrates the importance and variety of cases which come before the general practitioner.

Before attempting to draw any deductions from these analyses, I append a table indicating certain systems involved at the ages of 20 to 90 years for the months of June 1917 and March 1918:—

June 1911.								
Circulatory system (Cardio-vascular)	1	1*	0	8	11*	7	2	30
Respiratory system	3	5	1	6	4	3	0	22
Digestive system .	5	8	5	6	3	3	0	30
Blood . . .	5	6	0	1P	1P(2)	0	0	13
	14	20	6	21	19	13	2	95
		Specific Hemiplegia.		Two Hemiplegia.	Two Hemiplegia.	One Hemiplegia.		
March 1915.								
Circulatory system (Cardio-vascular)	0	1*	1	2	12*	5	2	23
Respiratory system	1	4	5	2	5	8	0	28
Digestive system .	3	4	5	4	2	2	0	20
Blood . . .	9	2	5	0	0	0	0	16
	16	11	16	8	19	15	2	87
		Specific Hemiplegia.			Four Hemiplegia.	*Three Hemiplegia.		

The outstanding features of these tables, even if the diminishing number of people living with the advancing years be not taken into account, are the increasing number of patients suffering from disorders of the circulatory system when over 50 years of age, and the fact that anæmia (chiefly chlorosis and secondary anæmias) occurs in the early decades of adult life. In all probability, although the data are necessarily scanty, these tables correspond with the average age-incidence of the diseases of the various systems named. One can readily understand the increasing incidence of cardio-vascular troubles with advancing years, but why should blood disorders (as a rule not threatening life immediately or remotely) be so prevalent before the fortieth year?

In venturing to found any opinions on the analyses presented to you (and this applies both to the analysis of industrial accidents and to that of the character of the cases occurring in general practice), in view of the relatively small numbers considered, I am fully aware that any deductions can only be tentative and suggestive. But, at the least, the analyses corroborate the opinion of Sir James Mackenzie, enunciated in his opening address, that it is the general practitioner who "sees the conditions which predispose to disease; he sees its inception and the course it pursues, passing from the signs for medical treatment to the time when it calls for surgical interference. He sees

the after-effects of operations . . . . If he be stimulated to inquire into the symptoms of disease, he is brought into contact with every special department, and has the opportunity for estimating them at their true value."

Obviously the conditions which approximate to those under which the general practitioner works (I am referring especially to "office" or "surgery" attendance) are not to be found in the wards of our large infirmaries but in the out-patient departments and the dispensaries. The patient presents himself at the dispensary or to a general practitioner when, in Sir James Mackenzie's words, he has "become conscious that all is not well with him," and he may complain of little more than "disagreeable sensations." It has to be decided if there be some unimportant and temporary derangement of function or whether some graver condition exists. Diagnosis is the all-important first step, and in spite of "the most careful examination no evident sign of disease may be perceived." But is sufficient attention given to that stage of disease "most difficult to diagnose and the most hopeful for treatment" in the out-patient departments and in the dispensaries? Are they equipped with all the necessary aids to the most careful examination? It is true that the experienced physician or surgeon may shrewdly guess by instinct, or rather as the result of conscious and unconscious observation, that the actual condition present may be more serious than the patient's complaints might suggest, and is impelled to investigate thoroughly where the inexperienced, or careless, or overworked doctor might be content with a lightning diagnosis and a haphazard shot at treatment. Experience can only come with opportunity and the lapse of time, but careful examination is within the compass of the youngest. How is he to differentiate the serious from the minor case without it? Surely he should receive part of his training in surroundings where the serious and the minor cases come at random. Is it not worth consideration whether all the applicants for hospital treatment (with the exception of those dangerously ill) should not enter the wards by way of the out-patient departments? Should these departments, both medical and surgical, and the dispensaries not occupy a more important place in the training of the student? If so, "side-room work" must be considered as essential to the out-patient departments and the dispensaries as it is in the wards. And if the student is to carry out this side-room work in his daily practice as a general practitioner, it will be found that those methods will be most valuable to him which are the most simple and speedy, so long as they be reliable. In this respect the qualitative tests are more useful than the quantitative. It is idle to expect that all these minor investigations can be relegated to some central pathological laboratory. The bulk of general practitioners work in the country or in small towns. Unless the practitioner conduct them himself many of his patients must go without their assistance. A

blood serum tube, a thermos flask as an incubator, and Neisser's stain will allow of confirmation of a diagnosis of diphtheria in a few hours. In a suspected case of ringworm a few hairs may be put into benzol and in a short time be mounted direct into balsam (with which the benzol is miscible) and a beautiful specimen of the mycelium may be secured. And so on.

Sir James Mackenzie laid much stress on the study of *subjective sensations* and thinks that as bacterial invasion "gives rise to sensations, it is likely that each organism gives rise to peculiar sensations," and that as "most of the symptoms, on the entrance of microbes into the body, will be subjective, by the careful correlation of these subjective sensations with particular microbes, in course of time the object (of diagnosis) will be achieved," without recourse to laboratory methods. This may be perfectly true: but as Sir James says, "before we are capable of appreciating the patient's sensations, it is necessary for us to have experience of large numbers of individuals who have suffered, and to have made a careful correlation of their sensations with the morbid condition which may be present . . . but it is absolutely necessary that the investigator shall have a long and careful training if he is to be capable of eliciting and understanding the facts" (*Principles of Diagnosis and Treatment of Heart Affections*, chap. i.).

I will add that a considerable insight into human character is also required.

This raises the eternal difficulty, *si jeunesse savait, si veillesse pouvait.*

Is it not equally probable that, with any disturbance of function, especially if it be dependent on bacterial invasion, changes in the metabolic processes of the body occur, and that a more intensive study of the excreta (especially the urinary) will reveal evidence of disease, and of the particular disease, before the appearance of physical signs? The information derived during recent years from the study of acetone and its congeners in the urine is an illustration of the illumination to be gained from this source, and is also an admirable illustration of the direct bearing such simple research has on treatment.

It is not easy for the busy practitioner, working most frequently single-handed, to work out these methods for himself, but if the out-patient departments and the dispensaries become centres of research in this direction, the student will have been trained to go out into general practice with the instinct of research ingrained in him, and his powers of diagnosis, prognosis, and treatment will be profoundly and beneficially affected. There need be no fear that such a man, even in the stress of professional work, will readily lose the inspiration of his training, nor will he be content to pass blindly by the opportunities daily presenting themselves to him.

Unless the out-patient departments and dispensaries have wholly changed their character since my student and young graduate days,

I recognise that the considerations I have advanced imply a somewhat revolutionary conception of the place they should occupy in the training of medical students. Students, teachers, and examiners are all affected. (i.) Much heavier demands on the time of the teacher would be made and probably many more teachers would be required. (ii.) Heavy expense in connection with the equipment of the out-patient departments and the dispensaries would be called for. (iii.) The dispensaries would needs be directly linked up with the departments devoted to practical clinical work. (iv.) The work done in these quondam accessory or auxiliary side-shows would require to be taken into account in examining a student for his degree. But only by some such reorganisation can the earlier stages of disease be studied under circumstances favourable alike to patient, student, and teacher.

I have no doubt, from what I have seen in general practice, that Dr. John Robertson was perfectly correct in his contention that much could be done in preventive medicine were the conditions which lead to duodenal ulcer, gastric ulcer, hyperemesis gravidarum, and many other diseases sufficiently studied, and that "they could be tackled with advantage." This is another field of work which would naturally fall to be cultivated in the out-patient departments and the dispensaries.

The classified list of conditions dealt with in the June (1917) table indicates the range over which the activities of the general practitioner are spread: it suggests the necessity of sufficient training in the various special subjects, and at the same time it exhibits one of the difficulties which face him in conducting systematic research from the paucity of similar cases in a given time, *e.g.* he may see a case of pernicious anæmia not once in a year.

Some recent developments, which were in operation before the war, have emphasised the need for students receiving as much practical training as is possible during their university career. The tradition for a young graduate of spending two or three years as assistant to a general practitioner has largely passed away. The National Health Insurance Act is not without responsibility for this result, whether that result be considered satisfactory or otherwise. In midwifery also the extending, and I consider entirely beneficial, employment of trained midwives limits the opportunity of experience in this direction, emphasising again the need for as much practical training as possible. On the other hand, the increase in numbers of well-equipped cottage hospitals makes it possible for a higher standard of surgery and clinical medicine to be looked for and attained.

The importance of prolonged and applied study of anatomy and pathology cannot be overestimated. I speak as a country doctor and I do not grudge one hour of the time I spent in studying anatomy, whether as a student or as a demonstrator in the university and the New School dissecting rooms. If I may venture on a criticism on the

way clinical medicine and surgery were taught in my student days—a method which may, for all I know, have completely changed since then—I would say that the greatest defect was the lack of co-ordination in the teaching of medicine and surgery, and the immediate ancillary—or should I say basal?—so-called theoretical subjects. Everything was in a water-tight compartment. When a student was studying practical surgery he saw little, if anything, of medicine, and when, in his final sessions, he was studying clinical medicine he hardly set foot in the surgical wards or the surgical out-patient departments. Is there insuperable objection or difficulty in the way of clinical medicine and clinical surgery being taught concurrently? Is it essential that when studying practical surgery the student shall spend all his infirmary time for six days a week in the surgical wards, to the complete exclusion of work in the medical wards, and *vice versâ* as regards medicine?

But the question arises here, What is the general practitioner of the future to be?

Is it quite certain that the health of the nation is to be more carefully tended when zymotic diseases, tuberculosis, syphilis, maternity and child-welfare work, *i.e.* mothers and infants, school clinics (Why not also diseases of the eyes, ears, throat, skin, etc.?) have all passed into the hands of State officials, at least so far as treatment is concerned?

I presume that general practitioners of some sort must exist, even in a State medical service. If so, patients must, in the first instance, consult such a general practitioner who, *ex hypothesi* being incompetent to carry out treatment (a long step towards making him so *de facto*), is to be responsible for the relatively simple and unimportant matter of diagnosis! I admit that the young State (or county) medical official is apparently the most efficient investigator of the origins of disease if one can judge by his ready, and, I suppose, reliable diagnosis of pre-tubercular conditions. To diagnose disease in its earliest stages is an ideal to strive after. The ability to foretell its incidence stirs my admiration, but I am left despairing, and perhaps unenvious, of emulation.

If the general practitioner is to be a diagnostician only and the tender of minor ailments and injuries, he will soon cease to be a diagnostician, and his other duties, without grave loss, may be handed over to the nurses attached to the State service. That the true aim of the medical profession is the prevention of disease no one will deny. That the direct assistance of the State is required for the prevention and control of disease every one is agreed. But analogies drawn from the Army are not directly applicable to civil life. A bureaucratic medical State service implies a drilled and subservient people. The National Health Insurance Act points a path towards that consummation. But,

unless the British genius, combined of tradition, independence, and individual initiative, be wholly wrong, and the Prussian conception of State domination be wholly right, I cannot believe that the conversion of the medical profession, as we have known it, into an establishment of State medical officials, whose necessary preoccupation is to consult the fads and prejudices of their immediate official superiors, will tend to the humane development of the human healer, to the progress of medicine, or to the conquest of disease.

Sir James Mackenzie, who seems to consider that the general practitioner is still a useful member of the community, is surely right when he contends that the man who has the opportunity of seeing disease in its early and later stages should be an investigator, a researcher. I have touched on some of the difficulties which confront him. Usually he works single-handed; not infrequently he is overworked: his activities are diffused over a wide range of interests; he is constantly interrupted; and he is hampered by the paucity of similar cases. As a rule he is not trained to be an investigator. He is not expected to be an investigator. He is not encouraged to be an investigator. Is any kind of incentive held out to him by this or any medical school to prosecute research? As Sir James Mackenzie says, "We see money poured out for the advance of medical research, but whoever thinks of utilising the opportunities of the general practitioner" (*Principles of Heart Affections*). And yet those opportunities are boundless. Doubtless it is the fault of the general practitioner that so many of those opportunities are neglected, but has the school that trained him no responsibility? He suffers from the common disadvantage of being human and requires the same spurs and inducements as are effective in other branches of human activity. Is his Alma Mater so bankrupt in invention that she cannot devise some means of keeping him "screwed up to concert pitch"? *

I have endeavoured to give you, as faithfully as I can, a picture of the daily work and problems of the general practitioner. His training is in your hands. No one can overrate the difficulties of your task. The position and authority of the medical profession do not depend alone on the immense importance of its duties to the commonwealth, but upon the intellectual and moral capacity of the individual practitioner to discharge them. I shall conclude with the words attributed to the greatest general practitioner of all time:—"Medicine is of all arts the most noble . . . whoever is to acquire a competent knowledge of medicine ought to be possessed of the following advantages: a natural disposition: instruction: a favourable position for the study: early tuition: love of labour: leisure" (Hippocrates—*vopos*).

* The institution of post-graduate classes is undoubtedly a step in the right direction.

LVIII. THE TRAINING OF MEDICAL STUDENTS FOR GENERAL PRACTICE: RECOLLECTIONS AND REFLECTIONS.

By D. ELLIOT DICKSON, M.D., F.R.C.S.(Edin.).

I HAVE been asked to speak of four things: (1) The general practitioner—how far has he found himself wanting in the knowledge of certain aspects of his subject, especially in his earlier days in practice? (2) What views he may hold regarding a better provision against such defects in future generations of practitioners. (3) What is defective in the undergraduate's training which might be removed by some change in the methods of tuition. (4) Any suggestions.

One and three may be taken together, and two and four. I probably have nothing new to offer on any of these heads, but I felt that the reiteration of the same story from different sources might be valuable. One hopes, in fact, that the repetition may not be vain, and that we may be heard for our much speaking.

First, let me say that I am strongly of opinion that there is nothing radically wrong with the teaching of the Edinburgh School of Medicine. When one sees the average type of graduate turned out from Edinburgh and recognises the immense amount of sound knowledge which he possesses, one feels chary about altering seriously a curriculum which has produced such a result. During twelve months in a General Hospital in France, where I happened to be in charge of the Medical Division, we had many discussions on Edinburgh *versus* Glasgow, both of which were represented, although the majority of our mess were London graduates. It was invariably held, I think, that Edinburgh had been (at least) the better school, and had reached its zenith in the year in which each one of us had graduated, but that it was questionable whether there was the same difference now. That there was, and still is, I think, a difference in the average type of graduate, is generally admitted. This difference is largely due to the difference in the type of students which the two universities attract to themselves. Glasgow, drawing its undergraduates from its enormous local and surrounding population, with its commercial instincts permeating all classes and ages, has a more practical, hard-headed, future guinea-coining type of student, who gets what he wants—a practical, everyday, working acquaintance with his work, and who is generally very successful in getting his pound of flesh—(I speak figuratively in these days of coupons)—in after life. While Edinburgh, with its cosmopolitan atmosphere in a university with a world-wide *clientèle*, its obvious lack of commercialism, and less obvious, perhaps, devotion to the higher things of life, attracts students who get ingrained in

them a more scientific aspect of medicine, and, I venture to think, higher ideals of its possibilities.

And it is the cultivation of this scientific spirit which has made Edinburgh what it has been, and it alone which will keep Edinburgh in the very forefront of the medical schools in the world; and it is this that I would plead for in the larger outlook when such a body as this is considering possible changes in the curriculum.

Moreover, it is essential that this scientific spirit should be inculcated in the general practitioner. It is *not* enough now, and will be still less so in the future, for this to be left in the hands of specialists in the big cities and hospitals. There was a definite idea twenty years ago that the days of the general practitioner were numbered, but the general practitioner is still with us, and I believe that much of any future advance in the science and art of medicine will come from the general practitioner. I take it that the ultimate ideal of medicine is prevention, and that of the general practitioner is prevention of disease as applied to individuals, or at least its recognition and successful treatment in its very earliest manifestations. It is in this direction that contract practice, such as mine, is potentially at least more ideal than ordinary practice. Now, after all, hospital practice is very largely concerned with the end-products of disease. Clinical methods at present consist in detecting the ravages of disease which has advanced to a point where definite physical signs are present, *e.g.* tubercle bacilli in sputum (*cf.* Army Regulations) in tuberculosis cases, and the only man who is likely to improve on this is the general practitioner who has the chance of seeing disease in its earliest stages and manifestations. To deal with this properly, and deal with the science and art of medicine, he must be imbued with the scientific spirit in his undergraduate days. There has been in the past too much reverence for authority and tradition. Let me instance only the British Pharmacopœia. How many of the remedies there have been officially admitted as the result of their scientific study, and what a field is there opened up for research. This, then, is the larger problem you must face if you are to improve the training of medical students.

But I come to more personal matters. The one large fact which stands out in my memory of early days is that I was quite incompetent to deal with very numerous cases of minor medical ailments which bulk so large in general practice and which do not fall under any definite heading in the text-books. Fortunately for myself, I have had experience in two medical schools—Dundee as well as Edinburgh; and I must confess that practically all my clinical work was learnt in Dundee, where students were small in numbers, and the teaching staff was younger both in years and in length of service than in Edinburgh, so that each student got an amount of individual attention from his teachers which was impossible under the existing circumstances in

Edinburgh. In my hospital student days I was understood to write up three cases in the medical wards during the final winter session; it was difficult then to do this on account of the lack of clinical material in proportion to the number of students, whereas, during vacations, it was quite a common experience in Dundee Royal Infirmary to take half a dozen cases in a single evening. There, also, one spent a couple of hours every morning during the session in the side-room or medical out-patient department, encouraged to deal with the cases oneself, and only asking the opinion of the assistant physician or surgeon in special cases. This got one into the habit of dealing with individual patients instead of merely making notes on special diseases.

Another want which was noticeable during these early days in practice was that my knowledge of the *use* of drugs was very insufficient, though my mind was stored with innumerable facts as to preparations of an infinite quantity of drugs and their uses, committed to memory against the ordeal of an examination, and not yet, at that time, forgotten. Even then I felt that I had been the victim of too much slavish note-taking and cramming up these notes, always with the one ideal of "getting through the exam." I knew all about the articulations of the sphenoid bone, but could not treat an "attack of the bile."

My recollections of pathology were largely confined to a sort of pathological club which half a dozen of us used to hold informally after the pathological lectures to try and find out from each other what the lecture had been about.

I had, I think, managed to get through my course with only one attendance at the post-mortem room in Edinburgh. Clinical medicine was represented by the memory of the useless ward cliniques with seventy or eighty students round one bed, while the professor led us into "transcendental realms of physiology."

The most useful, and by far the most memorable, course in my student career was an extramural summer session of midwifery—a priceless course to me—by Sir Halliday Croom.

My time had been so much spent in cramming for exams. that I had had none left for the more or less optional clinical classes in hospital in the evenings.

Since these early days I have had many assistants from different medical schools, and, with two notable exceptions, I have seen the same things wanting in them as were wanting in myself. A young graduate is really of very little use as an assistant to a busy general practitioner for at least several months, though he is generally a "safe" man—not a very high ideal, though, perhaps, a very necessary one. The exceptions were one assistant who had spent two years as an unqualified assistant before graduation, and another who had been

resident in Dundee Royal Infirmary, where during twelve months he had had resident charge, in succession, of *every* department, including out-patients.

In suggesting what might be done to improve the methods of tuition, it is a little difficult after twenty years' absence from university classes (for one must speak of personal experiences). But on looking over notes jotted down for these remarks daily for the past few weeks I find nearly every day the words "more clinical work"; "not enough contact with patients"; "use out-patient departments more"; "dispensary work." These are the things which tend to make a young graduate more useful. Actual *work* in these departments, not mere listening to clinical lectures, but *contact* with the patient, is what is, or was, wanted—all, of course, with proper and careful supervision. I do not think, for example, that anyone ever saw me percuss a chest while I was a student in Edinburgh. I certainly never had a *skin pencil*, than which there is no more valuable piece of apparatus in the training of a medical man. Its use is a constant governor in the way of accuracy, and pins one down to a definite expression of opinion in clinical work in a way in which nothing else does. I would make its use compulsory for all clinical clerks. Anyone who can at all accurately pencil out the limits of the heart, lungs, liver, will not go far wrong in any diseases of the chest.

And there is nothing like accurate clinical work for stimulating enthusiasm, keenness, and the scientific spirit, if it is properly overlooked. And especially should the lesions found clinically be correlated with the conditions found in the post-mortem room.

In all this, and for all this, it is essential that the teachers should not be too old. The loss of mental elasticity is fatal to the training of students. More use—much more use—should be made of the younger men, and *small* classes in clinical medicine and surgery, where each student can become expert in the methods of examination, are absolutely necessary.

So far as the actual curriculum is concerned, I have heard some who deprecated the amount of time spent on physics, botany, and zoology. I am far from that. I think they are invaluable in training the student in habits of accurate observation, and in giving him an introduction to embryology and a general sense of the theory of evolution. Chemistry, physiology, anatomy, and pathology are, of course, the fundamental sciences on which the art of medicine is based, and these cannot be interfered with without serious loss of efficiency. These lectures are not only valuable in themselves, but should also give the student the hall-mark of a university—a broad outlook, a capacity for observation, clear thinking, and an ordered judgment. I question whether the same can be said of the later courses. Take midwifery, for example, to which I have already referred. I learnt all that I knew

in my student days at an optional summer course, while the obligatory hundred lectures have left no impression on my mind.

In the statutory courses in medicine and surgery more attention might be paid to principles and less to details, especially in the less common conditions — *e.g.* I knew, or thought I knew, most of the details of diseases of the nervous system when I graduated, most of which were quite unnecessary either for principles or treatment.

The lecture rooms for the last year at least—better, two years—should be in the background. The *hospital* should be the college during that time. The *profession* of medicine may be taught in the university—the *practice* can only be taught in hospital. The curriculum at present is a great improvement in this respect on the old one.

It has often been said that "medicine has to be learned over again when the student has left his medical school." No amount of book knowledge of the principles of treatment, or of the means and methods available, is sufficient of itself to make a good practitioner. He must be trained at the bedside, in the out-patient room, in the dispensary.

It is pathetic to see the number of medical men who never use a microscope, who rarely think of testing urine, and who could not make a blood-count if they tried. The habit of note-taking among general practitioners is practically moribund, and can only be revived by stimulation during their hospital career. I do not mean, of course, elaborate case sheets, but jottings of the more important points of special cases.

With all this, it is important to remember (what some teachers, I think, forget, especially when they are riding their favourite hobby) that a student is not in the university to learn all that is known about disease, but to learn *how to study disease* and *how to treat patients*. This constitutes the art of medicine and can only be learned by constant contact with disease as manifested in individual patients, and by the application to each of the *principles* of diagnosis, prognosis, and treatment based on previous knowledge acquired in the lecture room.

Only by such ways and means can we lessen the reproach of doctors, in the popular aphorism with its little sting of truth, that "they are men who pour drugs of which they know little, into bodies of which they know less."

LIX. — THE TRAINING OF MEDICAL STUDENTS FOR GENERAL PRACTICE IN TROPICAL AND SUB-TROPICAL COUNTRIES.

By JOHN M. DALZIEL, M.D., B.Sc.(Public Health), D.T.M.&H.(Liverpool), F.L.S.

THE circumstances of medical practice in tropical and subtropical climates probably offer a much wider range of conditions than those of the general practitioner at home, but whether the graduate is destined to pursue his profession in the home country or abroad, his preliminary training as an undergraduate must be the same.

The special equipment of the student for medical work in warm climates is mainly provided by a course of tropical medicine and hygiene, and it is possible that many men have found in the School of Tropical Medicine, where the teaching is largely of a demonstrative and practical kind, the most useful part of their whole training. Such training stimulates a man to acquire for himself the habit of observation and some degree of personal interest in research, and I take it that it is just the sense of something lacking in this direction in the ordinary curriculum which is partly responsible for the present inquiry.

In considering the special circumstances of the man who is going abroad, we realise in the first place that the medical man in the tropics, as compared with the practitioner at home, is more likely to be thrown on his own resources in the matter of clinical pathology, and the most frequent of the simpler examinations coming within an average routine will probably be those of blood-smears and of faecal matter. *Malaria* remains, in spite of the positive differentiation of several other forms of fever, the chief cause of pyrexia in the tropics and the one to be excluded first in differential diagnosis, and the practitioner who diagnoses every rise of temperature as *malaria* without examining the blood soon lapses into the slovenly habit of the mere prescription scribbler. And similarly the prevalence of intestinal derangements in tropical practice calls for the very frequent use of the microscope to detect protozoa or the presence of helminthic ova or blood.

I can vouch for it that in the tropics at least it is no uncommon experience to find men who seem incapable of spreading a decent blood-smear or staining a slide of pus, yet these details have been taught for years. As they have no doubt been learnt at the proper time and place, and then forgotten, perhaps a simple remedy is to insist that some laboratory technique is a definite and essential part of the *final* examination, and not to take it for granted that it is remembered from the class of bacteriology or the clinical tutorials.

In the second place, the general practitioner in tropical climates, and equally the officer in Government Medical Service or in medical charge of plantations or mines, inevitably acquires some bias towards preventive medicine, if for no other reason than that a large number of his cases for treatment will be cases of communicable disease, communicable through the agency of the lower forms of life. One need only mention those two most widely-spread diseases, *malaria* and *dysentery*, and add to them the infections due to *animal parasites*, to indicate how closely the medical man in the tropics must needs be brought into touch with the preventable diseases.

I wish, therefore, to review very briefly the special instruction in "Tropical Diseases and Hygiene." The course for the diploma includes "*Bacteriology*," a lecture course on "*Diseases of Tropical Climates*," a practical course on "*Medical Entomology and Protozoology*," "*Tropical Hygiene*," and six months' clinical instruction in tropical diseases.

1. The "Bacteriology" is the advanced course for various classes of students and those members of the class who intend to specialise.

2. Systematic lectures on "Diseases of Tropical Climates." The diseases which are peculiar to the tropics or which assume a greater practical importance in warm climates are numerous enough and important enough to demand a fairly comprehensive course of lectures, perhaps especially where the supply of clinical material is scanty or precarious. At the same time, the text-books on the subject are sufficiently good and sufficiently defined in scope to render it easy for the lecturer to limit his treatment of the subject and to guide the students in their reading, so that more time can be devoted to clinical and laboratory work.

In the Liverpool school, during the period when I took the tropical course there, the set courses of lectures were somewhat limited, so as to serve rather as a background to the more practical instruction in the laboratory, clinical material being also abundant. *Parasitology*, for example, was taught very largely in the laboratory, such aspects as classification, etc., being explained on the blackboard at the time the particular species were actually before the members of the class. There was also the advantage of experimental material in connection with the research work of the school.

On the other hand, at Liverpool some of the most valuable lectures were of the unrehearsed type, or at least unclassified and not scheduled on any programme. The Liverpool school was then much concerned with research (1) at the Runcorn Laboratory; (2) by scientific expeditions to the tropics for the study of important diseases such as *malaria*, *yellow fever*, and *sleeping sickness*. The class then had the advantage of hearing at first hand, whenever a suitable opportunity occurred, the men actually engaged in contemporary experimental research, and even at times of seeing their work or the experts fresh from the most

recent scientific investigation of diseases in tropical countries. This more than compensated for any abridgment of the course of formal lectures.

3. The practical course of "Medical Entomology and Protozoology." Following the principle that training should be more on observational lines and intended to train the student to teach himself, it is obvious that the instruction most suited to this end and most likely to be of use to the practitioner in the tropics is this practical course. The enormous debt which is owed to medical investigation, largely along lines of zoological study, in making tropical countries more habitable to the white man, not to mention the stimulus to medical science in general, has brought the subject of medical zoology into the forefront of those subjects with which the practitioner in the tropics must be familiar.

The subject of *parasitology* used to be cloaked as a comparatively unimportant branch of *pathology*. For the student of tropical medicine it requires to be rehabilitated, andt he three subjects — *protozoology*, *medical entomology*, and *helminthology*—linked up might be definitely labelled "*Medical Zoology*," a now really important branch of medicine.

Now, this branch is particularly one which lends itself to teaching by demonstration and observation, with the minimum of explanatory lectures, and with some guidance on the part of the teacher as to suitable literature.

It would be possible to reduce the systematic lectures at least to the extent of referring most of the diseases due to the *entozoa* to the practical class, retaining only a few lectures for the larger subjects such as *ankylostomiasis* and *filarial* infection, the former on account of the essential importance of the subject and the administrative measures required, and the latter on account of its varied pathological effects and their treatment.

In the next place, the practical class of "*Medical Zoology*" is thoroughly suited for acquiring proficiency and resourcefulness in simple laboratory technique with the minimum of apparatus, for learning how to observe and how to record results, and how to recognise and classify species. The knowledge in this branch which it is necessary to have and to make use of as practitioner or Health Officer is that he must recognise the animal (insect or parasite), he must know its life history, and he must have some acquaintance with its habits. Every medical man is to some extent a naturalist, and in the tropics zoological material—whether noxious or innocent—forms in more senses than one part of the very atmosphere of one's daily activities.

Practical methods which are at once exact and at the same time simple and easily carried out—such as preserving in their proper fluids

pathological material or metazoal parasites, mounting insects securely, preparing permanent slides, or stained and unstained protozoal material from blood or bowel—these things, if taught to students of tropical medicine, do much to encourage original observation and to create an interest in research. And other results of such a practical interest are that it stimulates the observer himself to observe farther and to keep records, it furnishes material of interest, and possibly new to science, for the experts, and it supplies material at home for the instruction of other students to the obvious benefit of the teaching school. From this point of view, then, the class of applied "*Medical Zoology*" becomes the most important in the course, and I place upon it the highest value in supplying the medical man who is going abroad with the kind of knowledge which is most likely to be really required.

4. "Tropical Hygiene." As regards this subject we have to remember that in some respects ordinary practice in tropical towns has not yet outstripped to the same extent as at home the sort of preventive work which still largely occupies the time and energies of the Health Officer. It is otherwise at home, where the subjects of *child welfare*, *maternity* and *infant care*, *tubercnlosis* and *venereal diseases*, *school inspection* and *industrial hygiene*, have not only come to the front as public health problems, but have arisen more from the work of the practitioner, and even of non-medical social workers, than on the initiative of the Medical Officer of Health. The requirements of the practitioner in this country are now less on the technical branches of the subject, such as drainage, sewerage, and water supply, and more on the side of the direct applications of *preventive medicine*, *infant welfare*, etc., while neither the M. O. H. nor the general practitioner, perhaps especially in panel practice, can afford to remain ignorant of modern sociological problems.

Comparatively few men going to the tropics equip themselves with a diploma in Public Health; on the other hand, the majority now take the special training in tropical medicine with or without the diploma, and for these the general course of Public Health in the medical curriculum is not inappropriate as an introduction, though probably it includes a good deal of matter which might be omitted without practical loss, or which is sufficiently or more suitably dealt with in the course of "Tropical Hygiene." This appears to be a very comprehensive one; it is mainly taught in the laboratory, and the parts of the course which are of first practical importance are the subjects of water supply, drainage, and disposal of refuse and nightsoil, destruction of disease-carrying insects and animals, general sanitation of native lines and camps, disinfection of clothing, dwellings, and ships. These are the matters most likely to be acted upon by the medical man in the tropics if his services are employed to some extent in active public health or preventive work of one kind or another, as they so often are

Provided that *bacteriology* is thoroughly taught in its proper course, the chemical aspects of water and food need occupy little time, but the practical applications of disinfection should be taught to all students by demonstration. Another subject in which some instruction is essential is disposal of the dead, a matter which is much more likely to tax the practical efficiency of the medical man in the tropics than at home.

Also practical instruction in the art of performing a post-mortem examination and in reporting it accurately is a necessary part of the equipment of every medical man. In tropical countries the man working in private practice amongst natives has, in most circumstances known to me, comparatively few opportunities to do a post-mortem, but it is quite otherwise with the medical officer in one of the Government services, where, having charge either of native troops or of a gaol, or of both, with, in larger centres, medico-legal cases, inquests on persons found dead, etc., he has quite commonly not only the opportunity but the necessity to do post-mortem examinations fairly often. I am glad, therefore, to see in paragraph 6 of the Regulations for the Diploma in Tropical Medicine and Hygiene that "candidates shall also be required to produce certificates of proficiency in the making of post-mortem examinations and in preparing reports on them." This forms part of the course in "Practical Morbid Anatomy," and it is very necessary that every student's knowledge should be practically tested before he graduates.

The preventive aspect of the properly tropical diseases—*malaria*, *yellow fever*, *dysentery*, *plague*, *cholera*, etc.—and with these we must of course include the *enteric* group—finds place in the lecture course along with the practical instruction in *medical zoology* and *bacteriology*. But there are other diseases which are not classed as tropical, but which have a much greater practical importance in warm climates than is generally supposed, *e.g. pneumonia*, the incidence of which seems to be almost directly proportional to proximity to the equator; *tuberculosis*, which is probably on the increase amongst native races in the tropics; *venereal diseases*, which are a universal scourge and which many a medical man may find to be the most frequent conditions he has to treat or prevent; and to these must be added the effects of *alcohol*. To the practitioner and medical officer in tropical and subtropical countries the prevention of these conditions is, or ought to be, a matter of the greatest concern. To the general practitioner at home the problem of *intemperance* and the subjects of *tuberculosis* and *venereal disease*, with their prevention, are of the utmost importance, whether in ordinary practice or whether he becomes to some extent a specialist by undertaking work on these lines under a sanitary authority.

Definitely applied special teaching of the prevention of these diseases of great social importance and of wide effect on public health

is necessary for every student. Possibly a special lectureship in "Preventive Medicine" would find its best application here; it would fill a somewhat definite gap in the equipment of the general practitioner whether at home or abroad.

DISCUSSION.

Dr. Matheson Cullen.—I can speak from nearly twenty-five years of general practice, but of a kind different from that of Dr. Crerar and Dr. Dickson. Since leaving general practice I have had the opportunity of seeing general practitioners in other parts of Scotland and under different conditions to my own, and in reading the reports of the previous meetings in regard to the medical curriculum, I was specially struck with the fact that the speakers recognised that there was something amiss with the medical department, and were anxious to remould the curriculum to something nearer the necessities of the general practitioner. It is a step in the right direction that such courses as chemistry, zoology, and botany might be more evenly distributed over the course, instead of being taken at the beginning, for when the student comes to materia medica and pathology he has largely forgotten the general principles of chemistry, zoology, and botany. It seemed to me that first the elements should be given, and then, later, courses, such as parasitology and entomology, at the appropriate place.

I was pleased to see the importance of minor ailments emphasised. No matter how well the student knows about such conditions as pneumonia, he will find that in practice his chief work is to attend to patients rather than to doctor diseases. The out-patient department and the Dispensary seem to me to be the places where the general practitioner should get most of his training. The typical cases in the hospital are of course very important for the routine of writing reports and so on, but the scheme which has been suggested on the preventive side of medicine—the importance of which in its association with the public health is not sufficiently realised in the general course of lectures given in medicine—would bring the student to the end of his curriculum with a fixed and definite amount of the general principles to go upon, and a knowledge of the various diseases which he is most likely to meet. Though the curriculum proposed is likely to give us a better qualified general practitioner, you must go further if you wish to make that practitioner of the greatest value to the community. The fact must, however, be faced that no matter how good a man is when he leaves the school, when he gets into general practice he is faced with many difficulties—difficulties of time, difficulties which are inherent in the condition in which he has to make his living—and the consequence is that very often his future career is practically stereotyped upon the knowledge which he had at the moment of graduation. There is a tendency for the general practitioner to become a creature of routine, and it is difficult to get him interested in the scientific part of his work. The only way that that can be done is by making more popular and more attractive the student days of the future practitioner; because, after all, every man who enters as a medical student does not end his study with his student days. In a university such as Edinburgh the provision of classes which would be useful to the practitioner should form an essential part of the curriculum. Such classes would also be useful in showing the teachers what difficulties beset a

man in practice. Here, again, of course, we come up against the question of ways and means. It is not always easy for men to get away for the necessary time. Whatever may be said with regard to a State service, *i.e.* a whole-time service, which is the only one which would be adopted if a State service is ever tried in this country, the men would have to be given a certain holiday each year, and I assume that every, say, three years they would get two or three months in order that they might be able to go back and refresh their knowledge and get a grasp of the new facts which had emerged since they last were before the medical school. In addition to that, it is quite clear that if you are going to continue the scientific interest of the individual you must give him opportunities. The Government has recognised that, and before the war they had set aside a very considerable amount of money in order to establish cottage hospitals in various parts of the country. There is no doubt that at the present time there are men here and there in the country who are doing excellent work in that way. With such small hospitals, where a man has the opportunity of studying at his leisure, where cases will be taken and notes kept, I think there is a future in the way of research before the medical profession such as one could not contemplate even a few years ago.

Dr. Norman Walker.—Dr. Crerar ought to have mentioned to the meeting that he is the leading consultant to Cumberland: the ordinary practitioners there would not see such a large number of cases in a month. (I was struck with the fact that the number of visits in June was bigger than the number of visits in March.) Dr. Crerar referred to the fact that it was not so easy to get assistants now. This is due, I think, to the fact which he alluded to—the Insurance Act. But not only that. The present generation is far keener on making money that the preceding generation. The young man to-day wants to make his money immediately. The opportunities of making money by the man himself are very much greater, especially in an under-doctored town: in Dundee, for instance, they have the greatest difficulty in getting clinical assistants in the hospital because the men can all make more money in the town. This is an unwise way to look at things, if they only knew it.

It is an unfortunate thing that clinical medicine and clinical surgery are separated as they are; I almost think that the solution of that is that we must get over our custom of confining our hospital teaching from 11 A.M. to 1.30 P.M. It is also absurd that the summer vacation should be so long as it is.

It is an unfortunate thing in general practice that one may be at one's most successful seven or eight years after beginning. There is not the same prospect of going on improving in general practice in country districts as there is for those of us who start to practise in town. Yet it is a remarkable thing how loth doctors are to move. The country doctors in Scotland are very good indeed: you will often find among them men whose work shows that given a wider sphere they would have been far more successful, and yet they cannot make up their minds to break away from their practice.

I do not profess to know much of what goes on at the Dispensaries nowadays, but I do know that there is not the same competition to get on the staff as formerly, and that there is not the same keenness to do work at it. I should be sorry to think that the Dispensary has rather taken a back seat.

Both the leading speakers referred to note-taking. One thing which depressed me in certain recent controversies was the constant complaint about

the clerical work. No one can be a good doctor who does not take notes, but I do think there is something in our methods here which tends to sicken the student of it. Our case-taking is so long. The future practitioners should be encouraged to take *short* notes of *all* cases.

There is a certain amount of truth in Dr. Young's statement about the Scottish men. My observation on that matter is that in the universities the management is nearly always in the hands of the Professor of Anatomy and Physiology. He is the man who has his time at his disposal, and he tends rather to develop the scientific side of medicine, let us say to the advantage of that side. In the colleges the management is in the hands of the physicians and surgeons, and consequently in these bodies the attention is devoted pretty largely to the practical side. And that of course is greatly favoured by the fact that in England the student is encouraged to begin medicine with his first professional cleared out of the way by getting through it at school. This is a thing which ought to be taken into consideration when people are belittling the Scottish education—that it does deal rather more extensively than some universities with the practical subjects.

The difficulty with the general practitioner is the amount of work he has to do. He has such a tremendous amount of work to get through that it is very tempting to slack some of it. Somebody said once: "It is not true that there are too many doctors: there is not enough money for them." A doctor ought to be able to make an adequate living without having to do what many men must—see sixty or seventy patients a day. I hope things will be so adjusted that that will be impossible in the not far distant future.

Mr. Wilkie.—Remarks have been made as to the importance of teaching in the out-patient department and in Dispensaries, and on the fact that at the present day the Dispensary does not occupy the position it did some years ago. It would seem that the possibilities of teaching in the Dispensary might be very largely increased, and that something should be done to encourage research work, and particularly clinical research work, in the general practitioner. I would like to raise the question of making whole-time appointments for the Dispensaries in Edinburgh, with a view to improving the clinical facilities for research work and the teaching there by appointing men to the staff who have shown themselves to be successful general practitioners, and who have specially adapted themselves to clinical research work. Because if this clinical work in the Dispensary is as important as the two first papers brought out, then the Dispensary must be put on a very different basis to what it is at present.

It is a question for consideration whether a considerable amount of money should not be spent on making the Dispensary really suitable for modern teaching, and whether it would not be possible to make whole-time appointments of men who really have experience in general practice and in clinical research work.

Dr. J. S. Fraser expressed the opinion that we want whole-time appointments in medicine and surgery and gynecology and everything else.

Dr. Crerar said in reply.—Mr. Wilkie asked if the general practitioner would consider it a prize were he given a full-time appointment at the Dispensary, he of course devoting himself to the clinical study of disease, especially along the lines of clinical research. That would depend largely

upon whether the Dispensary is to be an integral part of the school. If it is to be kept in its present detached position, a full-time appointment to its staff will not be worth much. The school would require to bring the Dispensaries into much more intimate relations with the clinical training, and also with the examinations. And the same thing would apply to the out-patient departments. The Dispensary should be looked upon as giving an essential part of the training, and men should be appointed to the staff who would bear the same relation to the students as the clinical teachers in the Infirmary. Why indeed should not these themselves take some part in the teaching at the Dispensary?

Dr. Dickson said in reply.—Dispensary work is important, because it supplies an amount of clinical material which is not at present in Edinburgh supplied anywhere else. It gives the student the actual intimate contact with patients which he does not get in the larger hospital departments. For many years my type of practice was such that one could discipline one's patients considerably. My ideal is that medicine should be preventive, and a large amount of important work is done at the street corners talking to the mothers about the health of their children, and I encourage them to send for me *just before* the child is ill! When they realise they can get the doctor before they are ill, they do not trouble him much when they are seriously ill! So that that question of the immense amount of work of the general practitioner does not hold good after a certain number of years of practice.

Dr. Dalziel said in reply.—I should like to refer to one of the questions which came up in the matter of contemporary research, as it was brought to the notice of students of tropical medicine in Liverpool. From perusing the published reports of these meetings, I have gathered that one of the objects of the teaching is to stimulate the imagination of students and to create in them an interest in research. I believe that Professor Lorrain Smith's method of teaching morbid anatomy practically achieves this as far as that subject is concerned, and indirectly for the whole of medicine and surgery. Is nothing done to bring contemporary research in the teaching school before the notice of students? There seems to be a great deal of research going on in one department or another. I do not think that this should take up any of the student's time in a definite way, such as would be the case if a more practical suggestion were carried out, viz. to make student-assistants in any department where there is practical laboratory teaching, the object being that they should acquire familiarity with laboratory technique and some dexterity. It might be objected that this will be of no practical utility to the general practitioner; but apart from the immediate educational value of it, there would be a stimulus to the keen student, and even to the one less gifted with imagination, and it would bring the question of contemporary research before his notice as something real, and achieving actual results rather than as a thing quite remote from his current studies.

RECENT ADVANCES IN MEDICAL SCIENCE.

OBSTETRICS AND GYNECOLOGY.

UNDER THE CHARGE OF

A. H. F. BARBOUR, M.D., AND J. W. BALLANTYNE, M.D.

Pituitary Extract in Obstetrics.

The employment of an extract of the posterior lobe of the pituitary gland in midwifery cases has now been practised for a time sufficiently long to enable a fair estimate to be formed of its range of usefulness and of the measure of success to be expected from it. Mdlle. Chneerson (*Arch. mens. d'obstét. et de gynéc*, 1918, ann. vii. pp. 22-35) traverses the whole field of the obstetric possibilities of pituitary extract and reaches conclusions which, although perhaps a little optimistic, reflect the general impressions which have been formed by many observers. Rightly she emphasises the contra-indications to the use of the drug, for nothing so retards the establishment of a medicament in general use as its employment in unsuitable cases. These fall under four headings. First, as regards the state of the uterus, pituitary extract is forbidden when there are uterine cicatrices, especially those due to a former Cæsarean section, and, speaking generally, when there is cervical rigidity. Possibly the medical man may venture to give small doses in the latter condition, but only if he is able to give continued personal attention to the patient all the time. It may be added that till the obstetrician has acquired a considerable amount of experience he will be well advised to avoid the use of pituitary extract in the first stage of labour. Second, marked disproportion between the fœtal head and the maternal pelvis is a complete contra-indication to pituitary extract. A primary requisite in all cases is to determine that the head bears such a relation to the mother's pelvis that it will be able to pass through. Consequently great care must be taken to settle this question in all the cases in which the head is felt lying above the pelvic brim. Third, certain diseased conditions of the mother form contra-indications: these are heart disease, high blood-pressure, arteriosclerosis, marked albuminuria, and a general state of bad health. Hysteria and a neurotic state point to a very careful use of the preparation, and only by means of hypodermic injection. Contra-indications on the part of the fœtus are rare; but the signs of its impending death during delivery point rather to instrumental than to medicinal means for its rapid extraction.

Bearing in mind these contra-indications, the obstetrician may give

the extract with great hopes of success in uterine inertia in the stage of expulsion. The second stage of labour is indeed the period of predilection for pituitary extract; this is easily understood, for the drug acts chiefly by increasing and by reawakening uterine contractions when these have weakened or ceased. In delayed labour, after the rupture of the membranes, Mdlle. Chneerson was able to report successes in 88 per cent. In malpresentations the extract was also a valuable oxytocic (in face cases and pelvic presentations). It was of less value in twin births, and, as might be expected, in pelvic contractions it had a limited range of applicability. In the ante-partum hæmorrhages Mdlle. Chneerson claimed successes in four-fifths of the cases; the clearest indication was placenta prævia of the lateral variety after artificial rupture of the membranes. For the induction of labour pituitary extract is unsuitable, and it is of only little value to aid uterine contractions in the third stage of labour; in post-partum hæmorrhage also, when due to uterine inertia, its effects vary and it cannot be depended upon, although it may be given combined with ergotin. It is also useless for the induction of abortion; it may yield aid in the case of abortions in progress, but it is not to be trusted to, in incomplete miscarriages, for the emptying of the uterus. A minor indication is retention of urine in the puerperium, when the extract often is markedly efficacious. The main conclusion to be drawn from this contribution to the pharmacology and therapeutics of extract of the posterior lobe of the pituitary gland is that there exists in it a medicine of real value in obstetrics; it has its limits, it has also its contra-indications, and yet within its proper limits it is capable in careful hands of yielding great service. It is likely to be a permanent addition to the armamentarium of the obstetrician, but it cannot replace ergot and ergotin for certain emergencies in the post-partum period when a more continuous contraction of the uterus is called for. A moot point, to which reference is not made in Mdlle. Chneerson's paper, is whether it is not wise always to give ergotin after a labour in which pituitary extract has been used; personally, the maker of this abstract believes it is wise.

A Word on Behalf of Chloroform in Midwifery.

Dr. I. L. Hill of New York (*Amer. Journ. Obstet.*, 1918, lxxvii. 188-192) has more than a word to say in support of chloroform in producing anæsthesia in labour, and what he does say is salutary in these days when in certain places credit is being given in extravagant degree to what is called "twilight sleep," to "nitrous-oxide-oxygen," and the like. Dr. Hill firsts points out the danger of trying to apply the results of laboratory experiments on animals to the woman in labour, and he summarises the fallacies which have been so much in

evidence lately when he says: "I have been surprised at the tendency of obstetricians to discredit the use of the anæsthetic which has been most useful in their practice; not on the evidence of what has occurred in obstetrics, but what has been found at times in deep surgical anæsthesia and what is reported from animal experimentation." He goes on to quote Morley of Detroit that in experiments on animals chloroform to the extent of $\frac{1}{100}$th of the body weight has been given; to translate this into midwifery pratice would be to give an ordinary woman 1½ lb. of chloroform. Under the circumstances "she would no doubt have late chloroform poisoning if she could be made to live that long." Further, Dr. Hill claims that one cannot imitate the ideal chloroform analgesia of the woman in labour in animal experiments You do not, he says, "produce a benign, happy, semi-somnolence in the laboratory animal." He might have gone further and have said, for it is the fact, that obstetrical anæsthesia, even when it is deep, is not to be compared with surgical anæsthesia; the circumstances differ, and the psychology is entirely other than that of the woman in labour who asks for relief of pain and confidently expects to wake up with her baby lying beside her. Dr. Hill's objection to twilight sleep is that when it has been decided upon the woman must go through with it whether she has much or little pain, whereas there are many confinements in which the small amount of anæsthesia really needed can be conveniently supplied by a few short inhalations of chloroform; but there are other objections to the routine practice of morphine-scopolamine injections to which he does not refer, and there is also the often-overlooked fact that chloroform is very frequently added to make the latest and most painful stages of the twilight sleep labour really painless. When in a labour there arises a condition requiring deep surgical anæsthesia Dr. Hill chooses ether, except where there are contra-indications. Doubtless there are some on this side of the Atlantic who would agree with him, although there are also many whose long experience has taught them the wonderful safety of chloroform even when this duty is put upon it. The maker of this abstract has been impressed by the fact that the only obstetrical cases in which he has had anxiety (in no case was it more than passing anxiety) on account of chloroform anæsthesia in midwifery were those in which he was inducing premature labour and in which he was performing a Cæsarean section a few days before labour was due. He thinks that in each of these cases he was really producing the conditions of surgery: he was making it an "operation" in the sense which that word carries to the patient, at a fixed hour, with the necessary "preparation" which is of course inevitable and right, but which also has a marked psychological effect upon the woman. There was no pain leading the patient to insist upon getting relief and making her forget the risks, and there was in most of the patients the painful memory of previous experiences of

waking up to find a dead infant. Twilight sleep in certain chosen cases and with certain precautions is a valuable means of rendering the earlier and longer stages of labour (when chloroform could not very well be given) free from suffering; it is, therefore, a valuable auxiliary to chloroform in obstetric practice.

A Word on Behalf of Version in Midwifery.

Dr. Irving W. Potter of Buffalo (*Amer. Journ. Obstet.*, 1918, lxxvii. 215-220) has not been discouraged by the reception which his former paper championing version received at the meeting of the American Association of Obstetricians and Gynecologists in Indianapolis. [The Executive Committee withheld its publication, and hoped that in due course Dr. Potter would see "the error of his ways and be grateful to the men who discussed the paper adversely."] He had then done version in 500 cases; he has now done it 700 times. He lost no mothers in the first 500 cases and he has lost none in the second series of 200. He also, like Dr. Hill, is a trans-Atlantic supporter of chloroform in midwifery: "90 per cent.," he says, "of my labour cases have been chloroformed to the surgical degree without any accident or apparent danger either to mother or to child." Dr. Irving maintains from his experience that a properly performed version in the hands of a competent obstetrician is to be preferred to a difficult forceps operation; it lessens shock by shortening the labour, it conserves the patient's strength, and it does away with the injuries to the baby's head. Some of his conclusions are important. Version should never be undertaken until the os is fully dilated or easily dilatable; he might have added that it is not fair to the operation of version to try it only after several attempts to deliver by forceps have failed. The majority of occipito-posterior positions are best treated by version; it is as readily performed in a primipara as in a multipara; injuries to the child's head are reduced by a properly performed version; face presentations are better treated by version; prolapsus funis, when the cervix is dilated or dilatable and the cord is still pulsating, is best treated by version; so is placenta prævia in a multipara with a cervix which is dilated or dilatable; and a moderately contracted pelvis when the child is small is best treated by version. This may all be admitted, some of Dr. Irving's adverse critics may say, but what of the infantile mortality? Well, in his last 200 cases of version there were sixteen still-births, and among these there were two macerated fœtuses and one with a hydrocephalic head necessitating craniotomy. Further, when the indications for the version are read over and duly weighed, one is justified in asking whether there would not have been several other infantile deaths if forceps had been used. There is ground for

thanking Dr. Irving for his appeal for a greater employment of the operation of version. Improvements in the manufacture of forceps and in the technique of its application have unduly boomed the use of the instrument instead of the hand. There was a time when version was too often used; now there is every reason for thinking it is too seldom employed. It should be given a fair trial, and it certainly ought not to be sought for as a *dernier ressort* after forceps has failed, unless it is desired to make it responsible not only for its own risks but also for those due to the forceps. J. W. B.

NEW EDITIONS.

The Practice of Medicine. By Sir Frederick Taylor, Bart., M.D., *P.R.C.P.* Eleventh Edition. Pp. xvi. + 1091. With 97 Illustrations. London: J. & A. Churchill. 1918. Price 24s.

The eleventh edition of this well-known text-book on the practice of medicine has been carefully revised, and the new matter introduced includes certain diseases which are the result of the present war—trench fever, trench frost-bite, and trench nephritis being instances of these, as well as T.N.T. poisoning. The descriptions of a number of diseases have also been rewritten and brought up to date. One noteworthy feature is the inclusion of the electro-cardiograms which are excellently reproduced.

The author adheres to his former plan of devoting a section to diseases of the skin, and their addition often saves the reader's reference to special text-books.

It may seem presumptuous to offer any criticism with regard to the method of treating each subject, but it seems unfortunate that the section on pathological anatomy generally appears just before treatment, or, in other words, at the end of the disease and not at the beginning, and one looks in vain in certain cases for a separate paragraph on prognosis, and yet prognosis is often just that part which the anxious reader desires information about.

The illustrations, the print, and the index leave nothing to be desired, and we feel sure that the present edition will prove as valuable a contribution to the literature of medicine as its predecessors.

Medical Diagnosis for the Student and Practitioner. Fourth Edition. By C. L. Greene, M.D. Pp. xix. + 1301. London: Wm. Heinemann, Ltd. 1918. Price £2, 2s. net.

This large volume, which includes details both of the methods by which diagnosis is attained and a succinct account of the principal

medical diseases which afflict mankind, seems to have won a place for itself amongst those text-books in which diagnosis is dealt with to the exclusion of treatment, and it has now reached its fourth edition.

It is well arranged within its imposed limits, but it is likely to prove more useful to the qualified physician than to the student, for the latter would find himself embarrassed by the amount of detailed information which it contains. Moreover, from the point of view of an undergraduate, the use of special modern methods is somewhat overdone, and the value of these details would only be appreciated by those who have already mastered the more elementary and general methods of examination.

When allowance has been made for this, much interesting information will be found on the limits of normal variation in the position of such organs as the heart when examined by radiographic procedures, and this information should act as a wholesome check on the assurance with which some enthusiasts would support the findings obtained by a single method of examination, to the exclusion of older and more tried means of observation.

The book is profusely illustrated, but some of the illustrations lack sharpness of outline, whilst a few are more suitable for their probable original habitat in an instrument-maker's catalogue than in a text-book like the one under discussion.

In the chemical sections several of the colour reactions are shown in coloured plates, but in the process of reproduction the tints have become so altered that they would fail to give the student a true idea of the changes he should look for.

The book, however, taken as a whole, is a useful and suggestive addition to the large and increasing mass of guides to the diagnosis of disease.

Medical Diseases of the War. By Arthur F. Hurst. Second Edition. Pp. vi. + 319. With 6 Illustrations. London: Edward Arnold. 1918. Price 12s. 6d. net.

The call for a second edition so soon after the publication of the first testifies to the usefulness of this book. Since the previous edition the author has considerably expanded the section on war neuroses; a description of tetanus is added, and the accounts of spirochætal jaundice, soldier's heart, and war nephritis have been largely rewritten. The chapters on paratyphoid fever and epidemic jaundice are very comprehensive, and give an excellent account of the different varieties of the latter condition. The description of beriberi occurring among British troops in Mesopotamia is also of interest.

The attempt to treat all medical diseases of the war is a somewhat ambitious one, and the numerous clinical references, valuable as they are, render it difficult to get a clear picture of each disease.

In referring to anaphylaxis, it is a pity that the author writes of its dangers without strongly urging the necessity of the use of serum in really severe cases of dysentery. It is just in these cases that the chimera of anaphylaxis should be ignored. Major Hurst mentions, however, the method by which it is claimed that the dangers of anaphylaxis may be overcome. We are glad to see that the author deprecates psycho analysis except in skilled hands. The temperature charts are extremely good and well chosen.

Practical Organic and Biochemistry. New and Revised Edition. By R. H. A. Plimmer. Pp. xii. + 639. With Coloured Plate and other Illustrations. London: Longmans, Green & Co. 1918. Price 18s. net.

In this new edition of one of the most valuable handbooks which we possess, the work has been further extended and brought up to date. Originally planned as a text-book for medical students attending a class of physiological chemistry, in successive editions its scope has been gradually enlarged, and whilst still constructed on a basis of elementary organic chemistry it now includes sections on the methods used in more advanced work, both synthetic and analytic, which will greatly enhance its value to senior students and workers on the chemical problems of biology. Specially noteworthy are the clear and concise notes on organic substances in plants which supply information on matters which are otherwise not easy of access by students.

At the same time the book remains eminently adapted to the needs of medical students both in the earlier part of their curriculum and also in that period when they have to study the recent developments of clinical chemistry and its bearing on the condition of patients in the medical wards of a general hospital.

It can be warmly recommended to the attention of all who wish to keep in touch with one of the main lines of advances in modern medicine.

Principles of General Physiology. By W. M. Bayliss. Second Edition. Pp. xxiv. + 858. With 261 Illustrations. London: Longmans, Green & Co. 1918. Price 21s.

It is gratifying that a new edition of this important work is already required, and this for several reasons. It is welcome evidence that it is at last recognised in this country that physical chemistry cannot be left out of account in any attempt at adequate representation or discussion of the vital problems of physiology; and further, that it cannot be relegated to a series of appendices, even in small type, but must, as here, form the foundation for the whole structure.

Again, the size of the book serves as an index of the enormous progress made in recent years in applying physical chemistry to physiological problems. One has only to recall van't Hoff's celebrated *Acht Vorträge*, of which only a small part was devoted to biology and hardly any to physiological matters, to appreciate the difference.

In placing general physiology upon a physico-chemical basis the traditional treatment must obviously be abandoned, and the phenomena must be grouped together in accordance with function or mode of action. This, even if imperfectly attained in a first attempt, cannot fail to have a stimulating effect to be a direct incitement to research. If, as the author states in the new preface, this has not occurred, it is because of the war, and the full results can only be looked for with the return of more normal times.

Formidable difficulties confront an author making such radical changes in treatment, and the questions naturally arise—How far is the experiment justified? the attempt successful? To the former there can be only one answer; but as to the latter, one can well imagine two rather divergent opinions, depending on whether one's knowledge of physical chemistry or of physiology is the greater. In the latter case the physical chemistry will seem difficult, to say the least, and it is very doubtful if the brief summarised treatment at the commencement of each section, which is all that space will permit, can possibly enable one not previously conversant with that particular subject to understand the subsequent applications.

Among the features worthy of mention are the illustrations and biographical notices, though some of the former, along with the texts and quotations from the poets, seem rather superfluous. The literature references at the end of each section, and the collective list covering eighty-seven pages, are also excellent. It would be an advantage if the pages were included in the latter. Some of these lists are unaccountably incomplete, *e.g.* those on surface action and on the colloidal state. Also, Ostwald's *Grundriss* of 1899 is referred to, but not the important new edition of 1908, an English version of which appeared in 1912.

The work cannot fail to interest the reader, whether he be a scientific or a medical physiologist, or merely one "of all those who have any interest in science," to whom the author makes special appeal.

INDEX.

(*Abs.*) Abstract. (*Ed.*) Editorial Note.

Abstracts
Medicine, 301
Mental Diseases, 118
Obstetrics and Gynecology, 43, 375
Ophthalmology, 47
Alison, J., The Relation of School Education to the Study of Medicine, 165
Appendicitis, Acute, The Treatment of (W. Q. Wood), 3

Ballantyne, J. W., Abstracts on Obstetrics and Gynecology, 43, 375
Barbour, A. H. F., *see* J. W. Ballantyne
—— The Teaching of Gynecology, 274
Bonney, Victor, Remarks on the Teaching of Gynecology, 290
Brain, Neuroglia in a Case of Sarcoma of the (*Abs.*), 121
Bramwell, Edwin, Neurology and the Medical Curriculum, 209
Brewis, N. T., Teaching of Clinical Gynecology, 294
Bronnum, N. H., Case of Calculus Anuria Treated by Decapsulation of the Kidney and Drainage of the Renal Pelvis, 13
Brown, J. J. Graham, The Teaching of Neurology, 205
Burns, John, W.S., Income Tax Information, 341

Caird, F. M., Remarks on the Teaching of Clinical Surgery, 77
Calculus Anuria, Case of, Treated by Decapsulation of the Kidney and Drainage of the Renal Pelvis (N. H. Bronnum), 13
Casualties, 1, 65, 127, 189, 251, 315
Clarkson, R. D., The Teaching of Psychology to Medical Undergraduates, 240
Clinical Records—
Calculus Anuria, 13
Colon in the Adult, Acute Intussusception of the (James M. Graham), 128
Conjunctivitis, Gonorrhoeal, Ophthalmia Neonatorum and (*Abs.*), 47
Constipation, Habitual (James Ritchie), 253
Crerar, J. W., Training of Medical Students for General Practice, 350
Croom, Sir J. Halliday, The Teaching of Obstetrics, 268
Cushny, Professor A. R., Inaugural Lecture, 317

Dalziel, John M., Training of Students for Practice in Tropical Countries, 366
Dickson, D. Elliot, Training of Medical Students for General Practice, 361
Dowden, J. W., "No-Splint" Treatment of Fractures, 328

Eason, J., The Treatment of Splenomegaly with Anæmia in Syphilitics, 258
Eclampsia, Post-partum (*Abs.*), 45
Extra-Asylum Psychiatry (*Abs.*), 120

Fairbairn, J. S., Clinical Teaching in Midwifery and Diseases of Women, 286
Fairgrieve, M. M'Callum, Science Teaching in Secondary Schools in Relation to Medical Curriculum, 173
Ferguson, J. Haig, Teaching of Obstetrics and Gynecology, 294
Fowler, J. S., Diseases of Children, Teaching of, 99
—— Appointment, 190
Fractures of Arms, "No-Splint" Treatment of (J. W. Dowden), 328
Fraser, John, The Teaching of Surgical Tuberculosis, 154
—— Teaching of Surgical Diseases of Children, 104

Gold-sol Curve (*Abs.*), 121
Gonorrhoeal Conjunctivitis, Ophthalmia Neonatorum and (*Abs.*), 47
Graham, James M., Acute Intussusception of the Colon in the Adult, 128
Gulland, G. Lovell, The Teaching of Medicine, 19
Gunshot Wound, Unusual Case of Suicidal (B. J. Kyrie), 135

Harrison, L. W., The Education of Students in Venereal Diseases, 138
Hart, Bernard, Psychology and the Medical Curriculum, 213

Haultain, F. W. N., Teaching of Obstetrics and Gynecology to Undergraduates, 280

Income Tax Information, 341
Insanity, Prognosis in Manic-Depressive (*Abs.*), 121
Intussusception of the Colon in the Adult, Acute (James M. Graham), 128

Ker, Claude B., Teaching of Infectious Diseases, 151

Laboratory Study of Patients (W. R. Logan), 334
Littlejohn, Professor H., Teaching of Forensic Medicine, 346
Logan, W. R., First Steps in Laboratory Study of Patients, 334

Manic-Depressive Insanity, Prognosis in (*Abs.*), 121
Materia Medica, Progress in (A. R. Cushny), 317
Matthew, Edwin, The Teaching of Medicine, 24
Medical Curriculum, The (*Ed.*), 187
Medical Education—
  Diseases of Children—
    Medicine in (Fowler), 98
    Surgery in (Fraser), 104
  Dispensary Practice (Orr), 106
  Forensic Medicine (Littlejohn), 346
  General Practice (Crerar), 350
    „ „ (Dickson), 361
    In Tropical and Sub-Tropical Countries (Dalziel), 366
  Gynecology (Barbour), 274
    „ (Bonney), 290
    „ (Brewis), 291
    „ (Ferguson), 294
    „ (Haultain), 280
  Infectious Diseases (Ker), 151
  Medicine (Gulland), 19
    „ (Matthew), 24
    „ (Russell), 16
  Mental Diseases (Robertson), 225
  Midwifery and Diseases of Women (Fairbairn), 286
  Neurology (Bramwell), 209
    „ (Graham Brown), 207
  Obstetrics (Croom), 268
    „ (Tweedy), 283
  Obstetrics and Gynecology (Haultain), 280
    „ „ (Ferguson), 294
  Psychology (Hart), 213
    „ (Clarkson), 240
    „ (Ross), 231
Medical Education—*continued*
  School, Education in—
    „ „ (Alison), 165
    „ „ (Bentinck Smith), 160
    „ „ (Fairgrieve), 173
    „ „ (Stagg), 169
  Surgery (Caird), 77
    „ (Fowler), 98
    „ (Miles), 83
    „ (Thomson), 80
    „ (Turner), 68
  Tuberculosis (Philip), 145
  Surgical (Fraser), 154
  Vaccination (Robertson), 141
  Venereal Diseases (Harrison), 138
Medical Education in Scotland, i-xxviii
Medical Ethics, The Province of (George Parker), 191
Middlemass, James, Abstracts on Mental Diseases, 119
Miles, Alexander, The Teaching of Surgery, 83

Neuroglia in a Case of Sarcoma of the Brain (*Abs.*), 121

Obstetrics and Gynecology, *see* Abstracts
Ophthalmia Neonatorum and Gonorrheal Conjunctivitis: Their Relation to the General Hospital (*Abs.*), 47
Ophthalmology, *see* Abstracts
Orr, John, Dispensary Practice as a Part of Medical Training, 106

Parker, George, The Province of Medical Ethics, 191
Passes, 2, 65, 252
Philip, Sir Robert, Teaching of Tuberculosis for Undergraduates, 145
Post-partum Eclampsia (*Abs.*), 45
Prognosis in Manic-Depressive Insanity (*Abs.*), 121
Psychiatric Problems at Large (*Abs.*), 119
Psychiatry, Extra-Asylum (*Abs.*), 120
—— and the Medical Schools, The Need of Closer Relationship between (*Abs.*), 118

Radium-Therapy in Fifty Cases of Uterine Cancer (*Abs.*), 45
Reviews—
  Adami, J. G., *Medical Contributions to the Study of Evolution*, 181
  Bayliss, Wm., *Principles of General Physiology*, 381

Reviews—*continued*
Bowen, Wilbur Pardon, *Applied Anatomy and Kinesiology*, 53
Brown, Lawrason, *Rules for Recovery from Tuberculosis*, 62
Browning, C. H., *Applied Bacteriology*, 124
Burnham, A. C., *Text-Book of First-Aid and Emergency Treatment*, 63
Cabot, Hugh (edited by), *Modern Urology, in Original Contributions by American Authors*, 249
Candy, Hugh C. H., *A Manual of Physics for Medical Students*, 61
Carrel, A., and S. Dehelly, *Treatment of Infected Wounds*, 310
Cassidy, *see* Willoughby
Cramer, W., *Directions for a Practical Course in Chemical Physiology*, 309
Cumston, Charles Greene, *Notre Sympathetique Confrère François Rabelais*, 309
Cushing, Harvey, *Tumours of the Nervus Acusticus and the Syndrome of the Cerebello-pontile Angle*, 306
Dakin, H. D., and E. K. Dunham, *A Handbook of Antiseptics*, 310
Dejage, A., *Ambulance de l'Océan*, Vols. I. and II., 52
Dill, John R., *Lessons from the Enemy*, 313
Drummond, W. B., *A Medical Dictionary*, 184
Dunham, *see* Dakin
Elliot, R. H., "*Glaucoma*": *A Text-Book for the Student of Ophthalmology*, 55
Emery, W. D'Este, *Tumours: Their Nature and Causation*, 183
Eppinger, Hans, and Leo Hess, *Vagotonia: A Clinical Study of Vegetative Neurology*, 59
Faught, Francis Ashley, *Blood-Pressure from the Clinical Standpoint*, 58
Fischberg, Maurice, Gley's *Internal Secretions*, 311
Ford, Joseph H., *Field Hygiene and Sanitation*, 312
Frazier, C. H., *see* Pearce
Garrison, Fielding H., *An Introduction to the History of Medicine*, 60
Green, A. Russell, *X-Ray Atlas of the Skull*, 123
Greene, C. L., *Medical Diagnosis*, 379
Reviews—*continued*
Greenwood, William Osborne, *Scopolamine-Morphine: Semi-Narcosis during Labour*, 54
Harrison, L. W., *The Diagnosis and Treatment of Venereal Diseases in General Practice*, 54
Hart, Bernard, *The Modern Treatment of Mental and Nervous Disorders*, 311
Hartzell, Milton B., *Diseases of the Skin: Their Pathology and Treatment*, 53
Hess, Leo, *see* Eppinger
Hewlett, R. Tanner, *Pathology, General and Special, for Students of Medicine*, 55
—— *A Manual of Bacteriology*, 56
H.M. Stationery Office, *Industrial Health and Efficiency*, 312
Huggins, G. Martin, *Amputation Stumps: Their Care and After-Treatment*, 183
Hurst, A. F., *Medical Diseases of the War*, 380
Jelliffe, Smith Ely, *The Technique of Psycho-Analysis*, 314
Johnston, Cecil Webb-, *Painless Childbirth in Twilight Sleep in the East*, 184
Jones, H. Lewis, *Medical Electricity*, 125
Keith, Arthur, *see* Treves
Kemp, Robert Coleman, *Diseases of the Stomach, Intestine, and Pancreas*, 57
Kerley, C. G., *The Practice of Pediatrics*, 125
Kleen, Emil A. G., *Massage and Medical Gymnastics*, 312
Knox, Robert, *Radiography and Radio-therapeutics*, 181
Krehl, Ludolph, *The Basis of Symptoms*, 59
Krumbhaar, E. B., *see* Pearce
Laboratory Methods of the United States Army, 313
Leftwich, R. W., *Aids to Rational Therapeutics*, 309
Lewis, Thomas, *Clinical Disorders of the Heart-Beat*, 311
Lockyer, Cuthbert, *Fibroids and Allied Tumours* (*Myoma and Adenomyoma*), 182
Lumb, N. P. L., *The Systematic Treatment of Gonorrhœa*, 62
Lusk, Graham, *Food in War Time*, 310
M'Combie, J., and A. F. Menzies, *Medical Service at the Front*, 313

Reviews—*continued*
Mackenzie, Colin W., *see* Treves
Mackenzie, Sir James, *Symptoms and their Interpretation*, 250
Maclean, Hugh, *Lecithin and Allied Substances: The Lipins*, 123
Macleod, J. M. H., *Burns and their Treatment*, 62
Maloney, Wm. J., *Locomotor Ataxia (Tabes Dorsalis)*, 305
May, Otto, *The Prevention of Venereal Diseases*, 185
Menzies, A. F., *see* M'Combe
Modi, Rai Bahadur Jaising P., *Elements of Hygiene and Public Health*, 312
Morris, Sir Malcolm, *Diseases of the Skin*, 57
Moynihan, Sir B., *American Addresses*, 310
Pearce, R. Mills, *The Spleen and Anæmia: Experimental and Clinical Studies*, 124
Plimmer, R. H. A., *Practical Organic and Biochemistry*, 381
Price, Frederick W., *Diseases of the Heart*, 307
Quénu, E., *Plaies du pied et du cou-de-pied par projectiles de guerre*, 184
Reveille (Quarterly Magazine), Edited by John Galsworthy, 310
Ruhrah, John, *Poliomyelitis in all its Aspects*, 305
Stelwagon, Henry, *Diseases of the Skin*, 58
Stimson, Lewis A., *A Practical Treatise on Fractures and Dislocations*, 90
Stokes, John H., *The Third Great Plague*, 310
Sutton, Edward, *Fitting out and Administration of a Naval Hospital Ship*, 309
Taylor, Sir F., *The Practice of Medicine*, 379
Thresh, J. C., *Water Analysis*, 309
Todd, Alan H., *Practical Handbook of Surgical After-Treatment*, 310
Transactions of the Thirty-Ninth Annual Meeting of the American Laryngological Association, 1917, 313
Treves, Sir F., *Surgical Applied Anatomy*, 62
Turner, Creighton H., *see* J. C. Wilson
Vedder, Edward B., *Syphilis and Public Health*, 185
Waddington, Vera, *What Every Masseuse Should Know*, 63
Reviews—*continued*
Wallace, Cuthbert, *War Surgery of the Abdomen*, 307
Wenyon, C. M., *Human Intestinal Protozoa in the Near East*, 308
Williams, Leonard, *Minor Maladies and their Treatment*, 126
Willoughby and Cassidy, *Anti-Malarial Work in Macedonia*, 62
Wilson, J. C., *The Complete Medical Pocket Formulary*, 63
Ritchie, James, Habitual Constipation, 253
Robertson, George M., Teaching of Mental Diseases in Edinburgh, 225
Robertson, W. G. Aitchison, The Teaching of Vaccination, 111
Ross, T. A., The Teaching of Psychology to Medical Students, 231
Russell, William, The Teaching of Medicine, 16
Ryrie, B. J., An Unusual Case of Suicidal Gunshot Wound, 135

Sarcoma of the Brain, Neuroglia in a Case of (*Abs.*), 121
Smith, Miss Bentinck, The School Education of Girl Candidates for the Profession of Medicine, 160
Splenomegaly with Anæmia in Syphilitics, The Treatment of (J. Eason), 258
Stagg, C., The School Curriculum of Boys who Intend to Become Medical Students, 169
Symphysiotomy (*Abs.*), 43
Syphilis, Does the Gold-sol Curve Indicate? (*Abs.*), 121
Syphilitics, Splenomegaly with Anæmia in, The Treatment of (J. Eason), 258

The Treatment of Acute Appendicitis (W. Q. Wood), 3
Thomson, Alexis, The Teaching of Systematic Surgery, 80
Turner, G. Grey, The Essentials of Surgical Teaching, 68
Tweedy, E. Hastings, Reasons for the Present Defective Education in Obstetrics, with Suggested Remedies, 283

Uterine Cancer, Radium-Therapy in Fifty Cases of (*Abs.*), 45

Wood, W. Q., The Treatment of Acute Appendicitis, 3

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